MARINE REVIEW.

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CONTRACTS FOR NEW SHIPS.

LAKE BUILDERS ARE AT WORK ON THIRTY-ONE VESSELS VALUED AT $4,043,600—THE COMBINED CAPACITY OF THE FREIGHT CARRIERS IS 77,900 GROSS TONS.

The Review of Nov. 4 contained a table giving particulars of new vessels building in the principal ship yards of the lakes. Since that date several important contracts have been closed, and there are a dozen or more small vessels to be built during the winter that were not included in the first table. The list covering all lake ship yards is now complete, and is published herewith. There are in all thirty-one vessels valued at $4,043,600. The freight carriers, steam and sail, number fifteen, and their combined capacity on 17 feet draft is 77,900 gross tons.

The Bertram Engine Works, Toronto, Ont., will build in addition to the Richelieu & Ontario steamers for St. Lawrence service, three steel grain barges for the Prescott Elevator Co. They also report that they will build two light-draft stern-wheel river steamers for the Canadian Pacific Railway, to be used on the Stickeen river in Alaska. It will also be noted that the Polson Iron Works of Toronto is to build a stern-wheel steamer for the Stickeen river service. The Marine Iron Works, Chicago, has begun the construction of several shallow-draft steamers for Yukon river service, but their customers requested that no particulars be given out, as such information might be used by other parties going into the same field. Lake ship builders are therefore in possession of quite a large amount of new work, due to the discovery of gold in the far northwest.

With the exception of these vessels for Alaska and a few others of the smaller class, nearly all of the contracts that make up the accompanying table have been announced in the Review as they were let from time to time. Arrangements for the construction of a large harbor tug for the Milwaukee Tug Boat Line are about complete. Dimensions of the hull have been decided upon, but the hull contract has not as yet been let. The tug will have a length over all of 93 feet, 21 feet beam and 12 feet molded depth. The Sheriffs Manufacturing Co. of Milwaukee is to build the engine, which will be a triple-expansion, with cylinders 14, 22½ and 36 inches diameter and 30 inches stroke. The boiler, which will be of Scotch type, 12 feet long and 10 feet in diameter, with a guaranteed working pressure of 185 pounds of steam, is to be built at the Manitowoc Boiler Works. It will be provided with forced draught apparatus.

Another tug, dimensions of which are given in the table, will be built by Wallace Hill of Fish Creek, Wis. Mr. Hill will also build for Capt. E. B. Graham of Fish Creek a wooden passenger and freight steamer of 126 feet keel.

Some Preparation for 1898.

It is a matter of encouragement to note that the representatives of Lake Superior iron mines have thought it necessary to begin with the present week a series of conferences that must be held before there is any definite action regarding an association to deal with output, prices, etc. An early beginning denotes a feeling of confidence among the ore dealers regarding the heavy business that is expected in all branches of the iron industry during 1898. As in previous years, an effort will be made, of course, to include the Mesabi mines in the association, but there is not much hope of accomplishing this end. The conservative disposition of the ore association regarding prices has made it popular among furnacemen, who realize the advantages of reasonable and uniform prices, and some of the ore dealers are of the opinion that notwithstanding the extent of mining interests now held by the big consumers, the chances of a strong ore organization are better than they were a year ago. But with increased mining costs and other conditions prompting some increase in the price of ore during the coming year, there are a great many difficult problems to solve in the formation of an association, and until several of these meetings are held there will be little that is definite to be said regarding the policy of the ore companies. It is quite probable, however, that sales of ore will be made much earlier than in either of the past two years.

The Ohio soft coal interests, which are controlled in part by Ohio coal railways, are planning a combination much stronger than anything that has as yet been attempted in the soft coal trade. With the failure of two or three of the Ohio coal railways of late their management has fallen into strong hands in New York, and with these changes a more vigorous policy in general organization has been expected for some time past.

General Wilson, chief of army engineers, has just completed the collection of a complete set of portraits of his predecessors in office from the time of the organization of the corps of engineers under the act of congress of March 16, 1802. To get the portraits of the first four chiefs of engineers it was necessary to take photographic copies of their portraits in oil on the walls of the military academy at West Point. These were Col. Jonathan Williams, the first incumbent of the office, and his immediate successors—Col. Joseph G. Swift, Col. W. K. Armistead and Gen. Alexander Macomb. There have been fourteen chiefs of engineers in all to date. Gen. Joseph G. Totton held the office for twenty-six years, from 1838 to 1864, and the next longest service was that of Gen. A. A. Humphreys, who held office for thirteen years, from 1866. Col. Williams and Col. Charles Gratiot directed the affairs of the engineer department for ten years each. The others averaged a service of about two years. The portraits have been hung on the walls of General Wilson's office in Washington.

Vessels under Contract in Lake Ship Yards.

BUILDERS.	TYPE OF VESSEL.	DIMENSIONS, OVER ALL	KEEL	BEAM	DEPTH	CAPACITY gross tons 17 FEET DRAFT.	APPROXIMATE VALUE.	ENGINES. DIMENSIONS OF CYLINDERS AND STROKE.	BOILERS—NUMBER, DIMENSIONS AND PRESSURE.	BUILDING FOR
American Steel Barge Co., West Superior.	Steel frt. stmr.	.....	414	50	27	5,900	$230,000	Quadruple; sizes withheld.	2, B & W watertube, 250	American Steel Barge Co.
American Steel Barge Co., West Superior.	Steel tow barge.	390	376	46	26	5,600	140,000	.....	.....	Minnesota Steamship Co.
Bertram Engine Works Co. Toronto,, Ont.	Steel pass. stmr.	277	269	36*	14	.....	250,000	Inclined Triple.	Scotch boilers.	Richelieu & Ontario Navigation Co.
Bertram Engine Works Co., Toronto, Ont.	Steel pass. stmr.	277	269	36*	14	.....	250,000	Inclined Triple.	Scotch boilers.	Richelieu & Ontario Navigation Co.
Bertram Engine Works Co,, Toronto, Ont.	Stern wheel stmr.	.....	160	35	5	.....	50,000	.....	.....	.....
Bertram Engine Works Co., Toronto. Ont.	.....	.....	160	35	5	.....	50,000	.....	.....	.....
Chicago Ship Building Co., Chicago.	Steel frt. stmr.	420	400	48	28	5,100	210,000	21, 30½, 44, 64 x 42.	Two, 14-8 x 11-6, 200.	C. W. Elphicke, Chicago.
Chicago Ship Building Co., Chicago.	Steel tow barge.	388	376	48	26	5,750	140,000	.....	.....	James Corrigan, Cleveland.
Cleveland Ship Building Co., Cleveland.	Steel frt. stmr.	426	406	50	28	5,750	220,000	Quadruple; sizes withheld.	2, B & W watertube, 250	Cleveland-Cliffs Iron Co., Cleveland.
Cleveland Ship Building Co., Cleveland.	Steel frt. stmr.	450	430	50	28	6,000	235,000	Quadruple; sizes withheld.	2, B & W watertube, 250	A. B. Wolvin, Duluth.
Craig Ship Building Co., Toledo, O.	Steel tug.	.....	70	15	8	.....	12,000	12, 20 x 16.	.....	U. S. Engineer, Buffalo, N. Y.
Detroit Dry Dock Co., Detroit.	Paddle pass. stmr.	324	314	44†	18	.....	375,000	Beam, 80 in l. p. x 12 ft.	Six, 12½ x 12½, 135	Cleveland & Buffalo Trans. Co.
Detroit Dry Dock Co., Detroit.	Steel pass. stmr.	.....	160	.....	.....	.....	75,000	15, 24, 38 x 24.	Two Scotch boilers.	Dunbar & McMillan, Michigan City.
Detroit Dry Dock Co., Detroit.	Steel frt. stmr.	400	.....	45½	28	5,000	225,000	Quadruple engines.	Three Scotch boilers.	Western Transit Co., Buffalo, N. Y.
Devney, J. P.. Ashtabula, O.	2 Wooden tugs.	.....	80	18	10½	.....	20,000	.....	.....	Builders' account.
Globe Iron Works Co., Cleveland.	Steel rev. cutter.	205	188	32	17	.....	193,800	25, 37½, 56¼ x 30.	Four, 11-8 x 10, 160.	U. S. Revenue Cutter Service.
Globe Iron Works Co., Cleveland.	Steel rev. cutter.	205	188	32	17	.....	193,800	25, 37½, 56¼ x 30.	Four, 11-8 x 10, 160.	U. S. Revenue Cutter Service.
Globe Iron Works Co., Cleveland.	Steel tow barge.	388	376	44	26	5,400	135,000	.....	.....	Mack-Becker fleet.
Hingston & Woods, Buffalo.	Dredge.	.....	135	44	13	.....	25,000	.....	.....	Hingston & Woods, Buffalo, N. Y.
Polson Iron Works, Toronto, Ont.	Stern wheel str.	.....	140	33	.....	.....	50,000	.....	.....	Canadian Pacific Ry.
Racine Boat Mf'g Co., Racine, Wis.	Steel stm. yacht.	.....	75	12	4	.....	15,000	Triple.	.....	Otto Young, Chicago, Ill.
Racine Boat Mf'g Co., Racine, Wis.	Steel stm. yacht.	.....	75	12½	4	.....	12,000	Triple.	.....	M. A. Ryerson, Chicago, Ill.
Union Dry Dock Co., Buffalo, N. Y.	Steel tug.	.....	90	.....	.....	.....	17,000	Triple.	Two Roberts boilers.	Maytham Bros., Buffalo, N. Y.
Wallace & Hill, Fish Creek, Wis.	Wooden stmr.	.....	140	25	12	.....	.....	.....	.....	Capt. E. B. Graham, Fish Creek, Wis.
Wallace & Hill, Fish Creek, Wis.	Wooden tug.	.....	65	14	9	.....	.....	.....	.....	Builders' account.
.....	Wooden tug.	.....	93	21	12	.....	15,000	14, 22½, 36 x 30.	One Scotch, 12 x 10 ft.	Milwaukee Tug Boat Line.
Wheeler F. W. & Co., West Bay City.	Steel frt. stmr.	475	452	50	28	6,100	255,000	26, 37½, 55, 80 x 42.	Four, 13-4 x 11-6, 200.	Bessemer Steamship Co., Cleveland.
Wheeler F. W. & Co., West Bay City.	Steel tow barge.	450	434	50	28	7,000	155,000	.....	.....	Bessemer Steamship Co., Cleveland.
Wheeler F. W. & Co., West Bay City.	Steel tow barge.	450	434	50	28	7,000	155,000	.....	.....	Bessemer Steamship Co., Cleveland.
Davidson, James, West Bay City.	Wooden frt. stmr.	315	300	44	26	3,150	135,000	16, 28, 42 x 36.	13 x 12 ft.	Builders' account.
Davidson, James, West Bay City.	Wooden frt stmr.	315	300	44	26	3,150	135,000	16, 28, 42 x 36.	13 x 12 ft.	Builders' account.
Davidson, James, West Bay City.	Wooden tow barge	312	300	45½	26	3,500	80,000	.....	.....	Builders' account.
Davidson, James, West Bay City.	Wooden tow barge	312	300	45½	26	3,500	80,000	.....	.....	Builders' account.

*Over guards, 62 feet.
†Over guards, 78 feet.

AN IMMENSE COFFERDAM

REQUIRED TO REPAIR THE LEAK AT THE BIG NEW TIMBER DOCK IN BROOKLYN NAVY YARD—NO WATER NOW ENTERING THE DOCK.

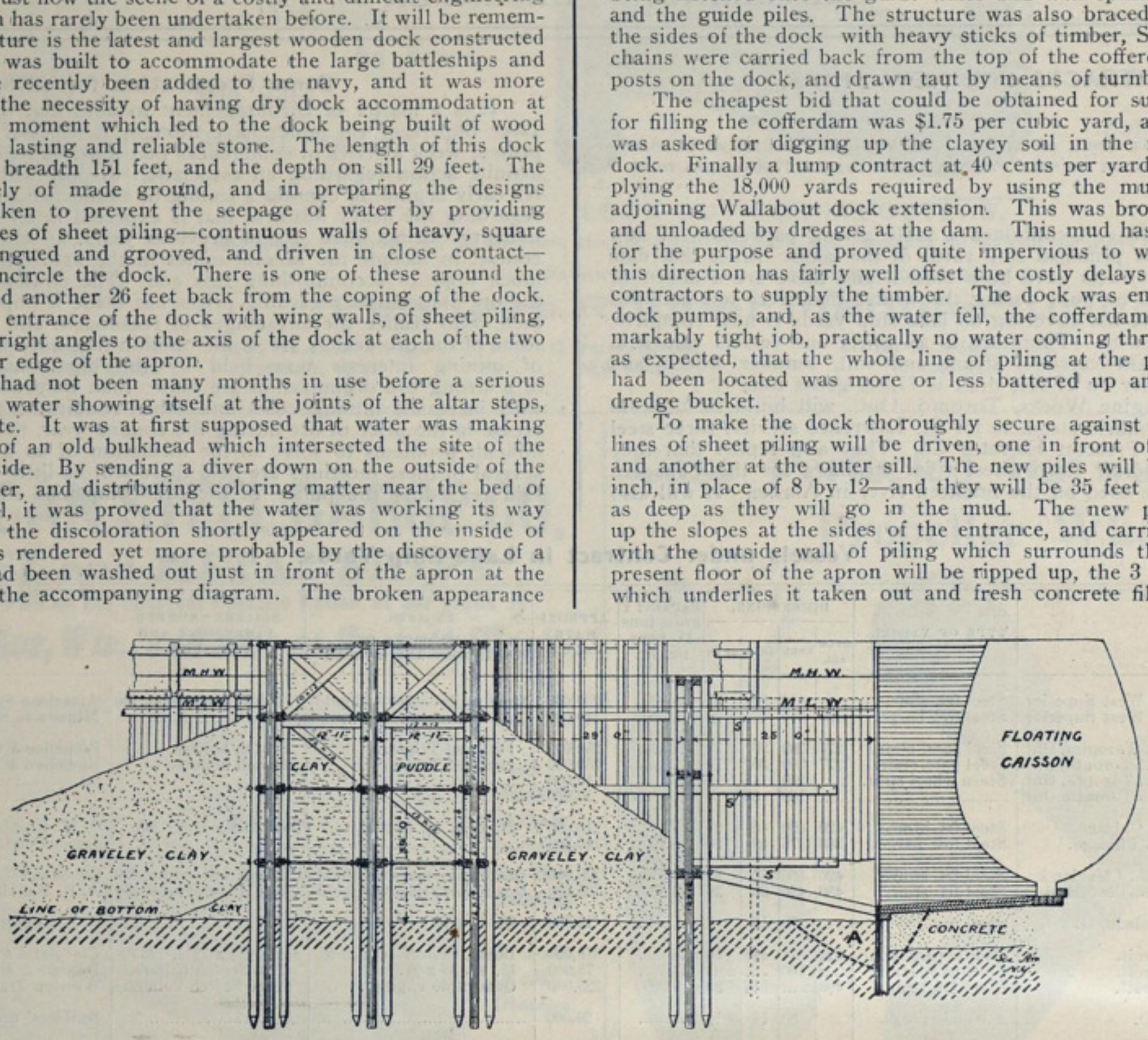
The large wooden dry dock at the Brooklyn navy yard, officially known as No. 3, is just now the scene of a costly and difficult engineering work of a kind which has rarely been undertaken before. It will be remembered that this structure is the latest and largest wooden dock constructed in this country. It was built to accommodate the large battleships and cruisers which have recently been added to the navy, and it was more than anything else the necessity of having dry dock accommodation at the earliest possible moment which led to the dock being built of wood instead of the more lasting and reliable stone. The length of this dock over all is 670 feet, breadth 151 feet, and the depth on sill 29 feet. The site consisted largely of made ground, and in preparing the designs special care was taken to prevent the seepage of water by providing several complete lines of sheet piling—continuous walls of heavy, square piles, which are tongued and grooved, and driven in close contact—which completely encircle the dock. There is one of these around the edge of the floor and another 26 feet back from the coping of the dock. They connect at the entrance of the dock with wing walls, of sheet piling, which are driven at right angles to the axis of the dock at each of the two sills and at the outer edge of the apron.

The new dock had not been many months in use before a serious leak developed, the water showing itself at the joints of the altar steps, near the caisson gate. It was at first supposed that water was making its way in by way of an old bulkhead which intersected the site of the dock on the north side. By sending a diver down on the outside of the caisson gate, however, and distributing coloring matter near the bed of the entrance channel, it was proved that the water was working its way in at that point, as the discoloration shortly appeared on the inside of the dock. This was rendered yet more probable by the discovery of a large hole which had been washed out just in front of the apron at the point marked A in the accompanying diagram. The broken appearance of the sheet piling at the outer edge of the apron suggested that it had been accidentally torn up by the bucket of the dredge which had been used to cut out the channel from the river to the dock. In order to examine the break and make the needed repairs it was necessary to build a huge cofferdam across the entrance channel and pump out the water. The magnitude of the task may be judged from the fact that the channel is 156 feet wide and the depth of the water is 34 feet, measured from mean high water mark. This gives a total hydrostatic pressure of 2,885 tons, which had to be withstood by the cofferdam. The construction of the dam is shown in the sectional diagram, for which we are indebted to Naval Constructor Bowles of the Brooklyn navy yard. The dam consists of a central wall of clay puddle contained within three lines of sheet piling, backed up by two embankments of gravelly clay, the toe of the inner embankment being held by a fourth wall of sheet piling as shown. The cofferdam is curved, presenting a convex face toward the river, or, to speak more strictly, it is built with five plane faces, those on the river side corresponding to the chords of a circle of 125 feet radius. This is done to secure an arch effect and cause the pressure of the water to be transferred to the walls of the channel, the latter acting as abutments. The lateral pressure thus set up is supposed to compress the lines of sheet piling and assist in keeping the joints watertight. Owing to the yielding nature of the sides of the channel, however, and the difficulty of driving the piles at the angles with a snug fit, it is a question whether a straight dam would not have been preferable. It would certainly have been cheaper, for it often took as long to fit and drive the angle piles as to drive the whole of one bent between them.

Soon after the commencement of operations, Naval Constructor Bowles was placed in absolute charge of the work, with instructions to push through the repairs with all possible speed. Contracts were at once let for the 600,000 feet of timber required; a temporary electric light plant was installed, and six pile drivers were put to work. Sticks of the size and quality required for the piling are not kept in stock, and when the contracts were let the 600,000 B. M. was yet standing in the Georgia pine forests. This had to be cut, dressed, hauled to a southern port and brought up to New York. Delays due to the non-delivery of the timber were frequent, and it was only by unflagging attention that the work has been brought to the present stage. The first operation was to drive eight lines of 14 by 14-inch guide piles, in pairs. Then the guide wales (horizontal lines of timbers to keep the sheet piles in line) were bolted in place. As three of these lines on each set were under water, they had to be adjusted by divers. This was slow and laborious work. Where the guide piles were out of line, blocking had to be inserted or notches cut in the guide wales and the piles drawn up to the wales by U-shaped yokes and bolted. The sheet piling is 12 by 14 inches and tongued and grooved. It is driven 16 feet into the mud, and in the four walls there are 1,100 separate sticks 56 feet in length. The sheet piling was carried well into the banks of the channel, the concrete coping of the dock being blasted out for this purpose. The three walls of piling were then braced by a system of 1½-inch tie bolts and 12 by 12-inch braces, the latter being notched onto the guide wales and well spiked, both to the wales and the guide piles. The structure was also braced at each end against the sides of the dock with heavy sticks of timber, S S, and ⅞-inch iron chains were carried back from the top of the cofferdam to the mooring-posts on the dock, and drawn taut by means of turnbuckles.

The cheapest bid that could be obtained for supplying the material for filling the cofferdam was $1.75 per cubic yard, and 80 cents per yard was asked for digging up the clayey soil in the neighborhood of the dock. Finally a lump contract at 40 cents per yard was closed for supplying the 18,000 yards required by using the mud excavated for the adjoining Wallabout dock extension. This was brought round in scows and unloaded by dredges at the dam. This mud has answered admirably for the purpose and proved quite impervious to water. The saving in this direction has fairly well offset the costly delays due to the failure of contractors to supply the timber. The dock was emptied by the regular dock pumps, and, as the water fell, the cofferdam proved to be a remarkably tight job, practically no water coming through. It was found, as expected, that the whole line of piling at the point where the leak had been located was more or less battered up and torn away by the dredge bucket.

To make the dock thoroughly secure against further trouble, two lines of sheet piling will be driven, one in front of the damaged piling and another at the outer sill. The new piles will be heavier—12 by 12 inch, in place of 8 by 12—and they will be 35 feet in length and driven as deep as they will go in the mud. The new piling will be driven up the slopes at the sides of the entrance, and carried out to a junction with the outside wall of piling which surrounds the entire dock. The present floor of the apron will be ripped up, the 3 or 4 feet of concrete which underlies it taken out and fresh concrete filled in to as great a depth as can be conveniently excavated. The flooring will then be relaid in two courses with broken joints, with its outer edge finished off in snug contact with the new line of piling. The fact that no water is now entering the dock proves that the leak must all have taken place at the damaged apron; and it is safe to say that when the present repairs are completed, Naval Constructor Bowles will place a perfectly sound dock at the service of the navy yard.—Scientific American.



CROSS SECTION THROUGH COFFERDAM CONSTRUCTED AT ENTRANCE TO BIG BROOKLYN DRY DOCK.

Stock of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes, Dec. 25, 1897:

	Wheat, bushels.	Corn, bushels.
Chicago	9,764,000	15,132,000
Duluth	1,571,000	1,533,000
Milwaukee	138,000	90,000
Detroit	183,000	108,000
Toledo	245,000	452,000
Buffalo	2,009,000	2,729,000
	13,910,000	20,044,000

As compared with a week ago, the above figures show, at the several points named, an increase of 1,697,000 bushels of wheat and a decrease of 1,408,000 bushels of corn. Grain afloat on the canals aggregates 46,000 bushels (oats).

There is a great variety in the types of light-draft boats that are being built in different parts of the country for service on the Yukon river, Alaska. A boat to be built by Lewis Nixon of Elizabeth, N. J., for a Philadelphia company, of which Thomas L. Hill is manager, will have a steel hull, and will be 70 feet long between perpendiculars, 83 feet over all, 15 feet 4 inches beam, and 3 feet 3 inches depth of hold. The vessel will be able to carry about 60 tons on 30 inches draft. Two engines will drive a paddle wheel at the stern. Engines will have cylinders 7 inches in diameter by 28 inches stroke. The boat will be steered by two balanced rudders.

Subscribers to the Review who have been receiving the paper through the marine postoffice, Detroit, will please notify us of home addresses at once, in order that changes may be made for the winter.

All charts sold by the Marine Review are corrected to date of sale.

Silverware for Two Ships.

The following correspondence, which passed between Geo. L. McCurdy of Chicago and Capt. Jamieson of the steamer Minneapolis, just previous to Christmas, is self-explanatory:

Geo. L. McCurdy, Chicago, Ill.—Dear Sir: On the 24th of April last, when the steamers Minneapolis and St. Paul were launched at South Chicago, you stated to Captain Jackson and myself that if we brought the ships through the season without stranding you would present us with a silver water service. I am glad to be able to report to you that both of these steamers came through without mishap of any kind. We never rubbed the bottom anywhere, and had no difficulty. I am sorry to state that while I was in the act of leaving the ship, I was thrown about 30 feet from the ladder, through a chain striking it, and was knocked senseless for several hours. I went down between the boat and the dock, but had no bones broken, and I am getting along all right now.

Steamer Minneapolis, WILLIAM JAMIESON.
Milwaukee, Wis., Dec. 23, 1897.

In answer to the foregoing letter Mr. McCurdy wrote Capt. Jamieson as follows:

Capt. William Jamieson, Master Steamer Minneapolis, Milwaukee, Wis.—Dear Sir: Your favor of the 23d inst. received, recalling to my attention my promise to send you a silver water service if you got through the season all right; also the promise of a water service for Capt. Jackson of the St. Paul. These two steamers were the first risks that I accepted this year, and having had the pleasure of seeing these fine ships launched and go into commission, I have taken a great deal of interest in them and their masters. Perhaps I may have a technical advantage of you, for I consider that it was just as important for you personally to get through the season all right as for the ship. In fact, I may say that I would rather have paid a claim on the ship than to have learned that you met with accident. However, I will not take advantage of this technicality, but on the other hand extend to you my hearty sympathy, with the hope that you will soon be in good condition again. The two water sets are in the hands of the engravers, and will be sent to you, I trust, so that you will have them as a Christmas greeting. Allow me at this time to thank you for the kind letters you have written during the season on aids to navigation, and on the behalf of my associates and myself to extend to you our best wishes for your welfare. GEO. L. McCURDY.

Chicago, Ill., Dec. 24, 1897.

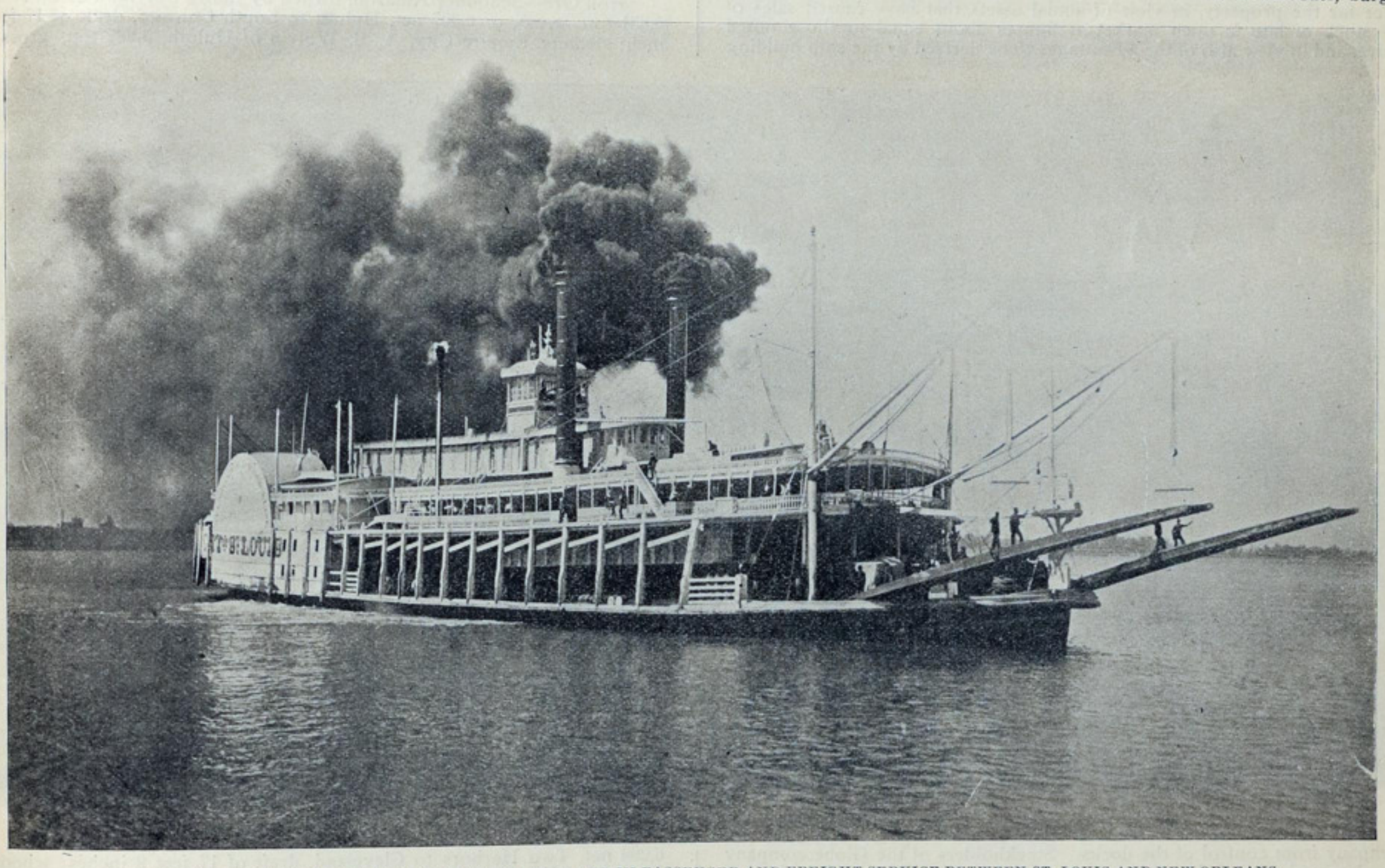
The 1898 volume of the "Record of American and Foreign Shipping," published by the American Shipmasters' Association of New York, is being delivered to subscribers. The present volume is the thirtieth annual issue of this valuable register and classification of shipping. The "Record" contains full reports and particulars of about 17,000 vessels of all classes and nationalities, rules for the construction and classification of iron, steel and wooden vessels, rules for the construction and survey of steam machinery and boilers for vessels, provisions for the installation of electric lighting and power apparatus on shipboard, and much other valuable information of special importance to underwriters and all firms or persons interested in shipping.

Holiday rates are available on the Nickel Plate road, Dec. 24, 25 and 31 and Jan. 1, returning until Jan. 4, 1898. 403—Dec. 31

United States Oar Inspector.

Of all the ridiculous bills introduced in congress of late that of Wm. Alden Smith (H. R., 4355,) is the worst. Notwithstanding the widespread operations of the steamboat inspection service, revenue cutter service and other bureaus of the government that in many ways interfere unnecessarily with the business of the ship owner, Mr. Smith would establish a new office, that of United States oar inspector. Money expended in printing such useless bills as that which follows is certainly thrown away:

"Be it enacted, etc., that from and after the first day of July, 1898, it shall not be lawful for any vessel, steamboat, barge, tug, or other floating conveyance engaged in the transportation of passengers to leave any harbor or port of the United States without being provided with full sets of boat oars of a first-class quality for each and every small boat carried on board of such vessel, steamboat, barge, tug, or other floating conveyance, for the safety of the lives of persons thereon; that any person or persons violating this law, being the master or owner of such vessel, steamboat, barge, tug, or other floating conveyance, on conviction before the proper court, shall be punished by a fine of $50 or imprisonment for not less than thirty days nor more than ninety days for each and every offense; that there shall be one United States inspector appointed by the secretary of the treasury with a compensation of $2,500 per annum, with all necessary traveling and hotel expenses, whose duty it shall be to visit the several ports and harbors of the United States and inspect the number and quality of the oars contained on the vessels, steamboats, barges, tugs, and other floating conveyances, and condemn all oars not safe to use for the protection of the lives of persons on such vessels, steamboats, barges, tugs, and other floating conveyances, by placing a stamp, 'condemned by the United States oar inspector,' thereon. Said inspector shall make report annually to the secretary of the treasury as to the condition of the oars found at the several ports and harbors of the United States, and said inspector shall be allowed one assistant to act as clerk, at the compensation of $1,000 per annum and traveling expenses. All acts and parts of acts in conflict with the provisions of this act are hereby repealed."



MISSISSIPPI RIVER STEAMER CITY OF ST. LOUIS, ENGAGED IN PASSENGER AND FREIGHT SERVICE BETWEEN ST. LOUIS AND NEW ORLEANS.

Two of the largest ships owned by the Peninsular & Oriental Navigation Co., the greatest of English shipping concerns, are the Arabia and Egypt, now nearing completion in England. Both of these big steamers, which, in addition to large freight capacity, will accommodate 500 saloon passengers and steam 20 knots an hour, are fitted with Howden hot draft appliances. These vessels are each 500 feet by 54 feet, and 37 feet 6 inches in depth, with a gross tonnage of 8,000. They have triple engines of 11,000 effective horse power, four cylinders, four cranks, and propeller blades of manganese bronze.

The Cramps have made a record in the building of the freight and passenger steamer Miami. It was only June 20 last that the contract for this vessel was signed, and fifteen days later the keel was laid, so that her construction has occupied less than six months. Yet she is a vessel of 1,150 tons displacement, with a collective horse power in the neighborhood of 1,600 and stateroom accommodations for 150 passengers. She was built for Henry G. Flagler and will ply between Miami, Fla., and Nassau, Bahama islands.

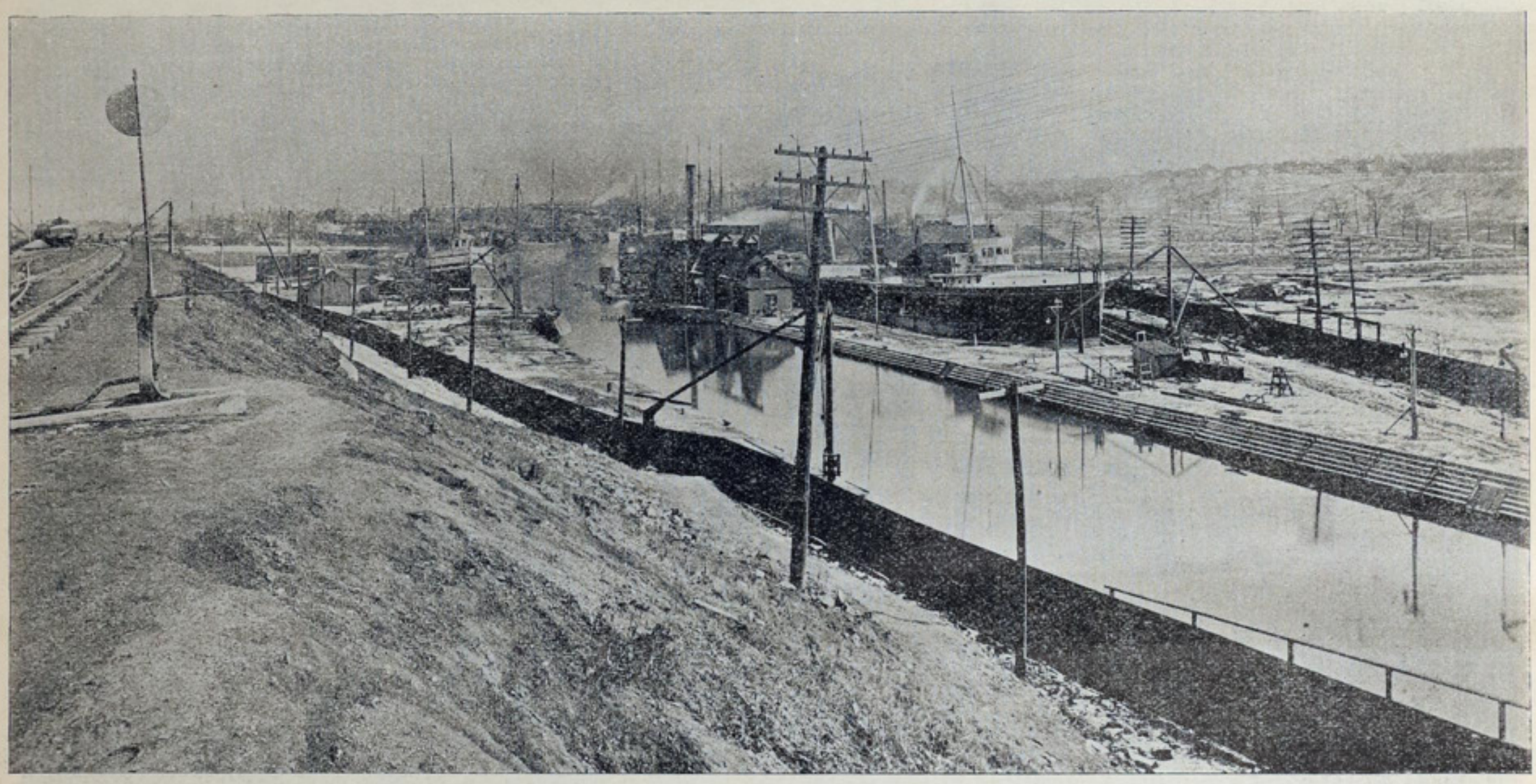
Cleveland Dry Docks.

The Globe Iron Works Co. of Cleveland has been figuring for more than a year past on the purchase of the plant of the Ship Owners' Dry Dock Co., which was closed a few days ago. The circumstances were such, when the dry dock company, a short time ago, put in a $16,000 plant for the repair of steel ships, and the Cleveland Ship Building Co. began the construction of a large dock in connection with its new ship yard at Lorain, that the Globe company was forced to secure control of this dock plant or build a new dock. It was this condition that caused plans to be made recently for a floating dry dock. But with control of the Ship Owners' plant, the Globe company is now much better off than would be the case if they had attempted the building of a dock of any kind on their own property.

The sale completed on Tuesday conveys to the principal stockholders of the Globe company—Messrs. H. M. Hanna, L. C. Hanna, Luther Allen, Robert Ireland and others—2,256 shares out of a total of 3,600 shares making up the capital of the Ship Owners' company, which, at $100 a share, par value, would be $360,000. It is understood that the price paid by the Globe company for this large block of stock was $122.50 a share, or on a basis of $441,000 for the entire property. This would mean for the retiring stockholders of the Ship Owners' company a price of $245 for each share of stock costing them $100, as the company doubled its stock when a new dock was built some time ago from accumulated earnings. But it is not thought that the Globe company has paid an extravagant price for the property, in view of actual assets that have caused sales of the stock of late in open market at figures about equal to those noted above, and in view also of the advantages to be derived by the ship building company from control of the docks. Stockholders of the Globe company are also in charge of the management of the smaller Cleveland dock, that of the Cleveland Dry Dock Co. They do not own a control of stock in this company, but their holdings are so close to a control that they would have no difficulty in making their interests secure in this regard. Thus the managers of the Globe company now have within their direction all three of the Cleveland docks, and the new river front property, which they have purchased from the Ship Owners' company, and which adjoins their ship yard at the head of the old river bed, gives them the most extensive plant on the whole chain of lakes. But it is not at all probable that this control of Cleveland dry docks will cause any change in the charges for docking or repairs. The Cleveland Ship Building Co.'s interests will, of course, be almost entirely at Lorain in the future, especially as leading stockholders in that company were also largely interested in the Ship Owners' Dry Dock Co., and competition between the Lorain and Cleveland plants will be just as spirited as it was when both concerns were in Cleveland.

Among leading stockholders of the Ship Owners' Dry Dock Co. who retire from that concern on account of this sale, are Capt. Thomas Wilson, J. H. Wade, Robert Wallace, James Wallace, Valentine Fries, Henry D. Coffinberry and George L. Quayle. These gentlemen, with the exception of Capt. Wilson and Mr. Quayle, are interested in the Cleveland Ship Building Co. As yet the new interest in the Ship Owners' Dry Dock Co has effected an organization that is to last for only a couple of weeks, but the officers elected will, in most cases, be permanent officers. They are: President, Luther Allen; vice-president, Capt. Geo. Stone; treasurer, R. L. Ireland; secretary, O. J. Fish; assistant treasurer and assistant manager, Gustav Cold; directors, H. M. Hanna, L. C. Hanna, Luther Allen, R. L. Ireland, O. J. Fish, Geo. Stone and R. L. Newman. There has been some talk of the two dry dock companies—Ship Owners' and Cleveland—being consolidated, but the plans of the principals of the different companies in this regard have not as yet been fully arranged.

With this dock plant the Globe company is prepared to do an immense amount of repair work. The largest vessels now afloat on the lakes can be docked at this plant, but in order to care for the two or three steamers of 50 feet beam now building, it may be necessary to increase the width of one of the docks later. This can, however, be done without difficulty. The larger dock is 450 feet over all, 430 feet on blocks, 50 feet width of gate and 16 feet over sill. The smaller dock is 320 feet over all, 300 feet on blocks, 55 feet width of gate and 13 feet over sill.



GLOBE IRON WORKS CO.'S COMBINED SHIP YARD AND DRY DOCK PLANT—STEAMER REPUBLIC ENTERING DOCK.

The 6,000-ton Ships.

The increased capacity of lake ships is strikingly illustrated in the difference between the largest cargoes of 1896 and those of the season just closed. The largest cargo moved on the lakes in 1896 was a load of ore taken on at Gladstone by the Mutual line steamer Coralia and delivered at Ashtabula. The weight of this cargo was 5,088 gross tons, or 5,699 net tons. From Lake Superior, where draft was limited on account of Sault river channels, the largest load in 1896 was 4,637 gross, or 5,194 net, moved from Ashland to Conneaut by the steamer Sir Henry Bessemer. During the season just closed vessels trading to Lake Superior have been loaded about as deep as those trading to Lake Michigan, and there have been as many as fifty or sixty cargoes exceeding 6,000 net tons. The record is held by the steel barge Amazon, owned by James Corrigan of Cleveland, in which a cargo of 6,307 net tons (5,631 gross) was moved from Duluth to South Chicago, on a draft of 17 feet 1 inch. Following are the largest cargoes of 1897:

Iron Ore—Schooner Amazon, owned by James Corrigan of Cleveland. 5,631 tons gross, or 6,307 net, Duluth to South Chicago, draft of 17 feet 1 inch; steamer Empire City, A. B. Wolvin of Duluth, 5,622 tons gross, or 6,296 net, Two Harbors to Cleveland, draft of 17 feet 2 inches; schooner Polynesia, James Corrigan of Cleveland, 5,477 tons gross, 6,134 net, Duluth to Fairport, draft of 16 feet 8 inches.

Grain—Steamer Crescent City, A. B. Wolvin of Duluth, 225,000 bushels of corn, equal to 6,300 net tons, South Chicago to Buffalo, draft of 17 feet; schooner Amazon, James Corrigan of Cleveland, 205,572 bushels of wheat, equal to 6,167 net tons, Fort William to Buffalo, 16 feet 8 inches draft; steamer Empire City, A. B. Wolvin of Duluth, 205,445 bushels of wheat, equal to 6,163 net tons, Duluth to Buffalo; steamer Geo. Stephenson, Bessemer Steamship Co. of Cleveland, 323,250 bushels of clipped oats, equal to 5,172 net tons, South Chicago to Buffalo, draft of 16½ feet.

Coal—Schooner Polynesia, James Corrigan of Cleveland, 5,654 net tons of bituminous, Cleveland to Duluth, 16 feet draft; steamer Carnegie, Wilson Transit Co. of Cleveland, 5,369 net tons of bituminous, Cleveland to Duluth.

The Big Ships Count.

The effect of sending the Bessemer fleet of big steel steamers and tow barges to Lorain for the winter is shown in figures that have been prepared regarding the tonnage at Lorain and Cleveland. There is in winter quarters at Lorain two-thirds as much tonnage as is laid up in Cleveland. In fact, there is no port on the lakes that will compare with Lorain in tonnage, when the number of vessels is considered. Although only nineteen steamers and ten barges are laid up there, the aggregate gross tonnage is 61,502. In Cleveland there are fifty-seven steamers and thirty-seven barges and schooners, but their combined gross tonnage is only 97,631. In previous years Lorain secured but three or four schooners and a steamer or two of the winter fleet, but the arrangement of the Cleveland Ship Building Co. for repair work on the Rockefeller fleet has made things different this winter.

All charts sold by the Marine Review are corrected to date of sale.

Seven Millions Required to Complete New York Canals.

Superintendent of Public Works George W. Aldridge and Engineer C. W. Adams of New York state have finally made a clean breast of the problem with which they are confronted regarding canal improvements. With the approval of the superintendent of public works, the engineer has made public a report showing that it will take at least $16,000,000 to improve the entire canal system of the state on the lines begun under the $9,000,000 improvement act. This means that $7,000,000 additional must be provided in order to complete the scheme of 9-foot navigation, for which contracts involving practically all of the appropriation of nine millions have been let. The people of New York will undoubtedly hesitate about undertaking this great additional expense, especially as the improvements are not of a kind that will admit of great difference in the size of vessels using the canals. Discussion of the subject will direct attention to the proposition that the Erie canal be turned over to the general government and enlarged on a scale of greater dimensions than are involved in the present work.

The excuse offered by the state department of public works for the great difference in estimates now submitted and those given out before the improvement was begun is contained in salient points of the report now at hand which are summarized as follows:

1. That no surveys for such an improvement of the canals as is now under way had ever been made up to 1896.

2. That the estimated cost of this improvement as submitted to the constitutional convention of 1894, was prepared in twelve days and was, therefore well known and stated to be practically mere guess work.

3. That the careful surveys and estimates were made in 1896 from a thorough examination of the 454 miles of canals to be improved showed that the probable cost of such improvement was about $16,000,000.

4. That an unsuccessful effort was then made to cut out work to bring the cost within the appropriated $9,000,000.

5. That the impossibility of using a large portion of the excavated material for use on the banks of the canals as originally contemplated very greatly increased the cost.

6. That during the progress of the work of excavation the unpreventable caving in of dilapidated and toppling walls and structures necessitated new constructions and increased quantities at large additional expense.

7. That contracts have already been let for the completion of about two-thirds of the proposed improvement, which portion it is expected will have been completed at the opening of navigation in 1898. The estimated cost at contract prices of this two-thirds of the work aggregates $7,121,812, though this covers two-thirds of the length and not the volume of the whole work.

8. The contracts already let cover what are believed to be the most difficult portions of the proposed improvement.

9. That approximately seven millions of dollars additional will be required to complete the improvement.

10. That with that sum available we believe the entire improvement can probably be completed at the opening of the navigation in 1899.

11. That the progress made to date has been as rapid as was consistent with other conditions and that the whole work might have been under contract now, had sufficient funds been available.

12. That contractors are required by law to bid upon a definite character and quantity of work and that they are finally paid for the actual amount of work performed at the contract prices. Under this plan the state always pays for the work actually done for it—no more, no less.

Holiday excursions via the Nickel Plate road Dec. 24, 25 and 31 and Jan. 1, returning until Jan. 4, 1898. 405—Dec. 31

Records of Last Passages.

In view of the large number of vessels that remained in commission during the past season long after the underwriters had discontinued all insurance, some of the vessel owners taking the risks on cargoes in their own uninsured vessels, it may be well to note, as a matter of record, the latest sailings from leading ports and the latest passages in the straits and canals.

The last vessel to leave Lake Erie for Lake Superior was the steamer W. D. Rees of the Wilson line, which sailed from Cleveland at 1 o'clock in the morning of Dec. 10. The Rees was the last vessel up-bound through the Sault canal, locking through on the 11th.

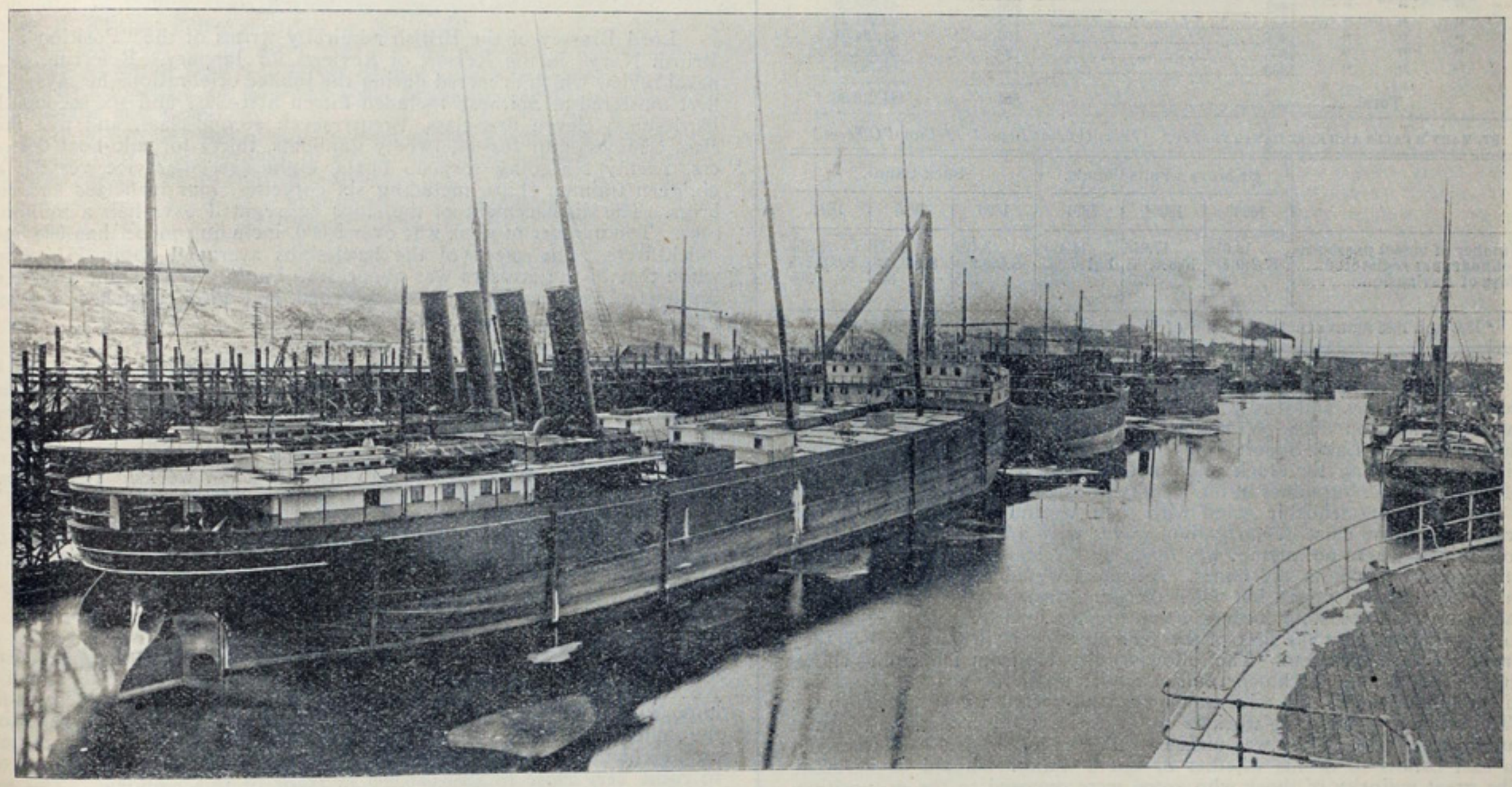
The last vessel to leave the head of Lake Superior was the City of Bangor, owned by Eddy Bros. of West Bay City. The Bangor left Duluth at 11 a. m., Dec. 10, and locked through the Canadian canal at the Sault early in the morning of the 12th. As a result of an accident just below the Canadian lock, she was delayed in the Sault river until the 13th, when the completion of temporary repairs enabled her to continue her trip in safety to Chicago.

The Canadian lock at the Sault was closed Dec. 12. The locks in the United States canal were closed three days earlier, on the 9th.

The last vessel through the Welland canal was the Monteagle, which passed down, bound for Ogdensburg, on Dec. 11.

The Davidson steamer Rappahannock, last vessel to leave Chicago with grain for the lower lakes, passed out of Chicago harbor at 8 p. m., Dec. 17.

Not until the day after Christmas, Dec. 26, was the record of passages complete at the Straits of Mackinaw. The steamers Raleigh and Aurora passed the Straits on that day, the former at 7 a. m. and the latter at noon. The thermometer recorded 25 degrees below zero on the day of these passages. Both vessels were loaded with coal for Milwaukee and reached that port without difficulty. The Aurora was also the last vessel to pass the Straits in 1896—Dec. 20, bound down.



GLOBE IRON WORKS CO.'S COMBINED SHIP YARD AND DRY DOCK PLANT—VIEW OF SHIP YARD.

Bags of Cement Used in Releasing the Rosedale.

Referring to the work of the Donnelly Salvage & Wrecking Co. of Kingston on the wrecked steamer Rosedale, one of the representatives of Chicago underwriters says: "That job was as skilfully handled as any work of the kind ever undertaken in this country, and the Kingston company has covered itself with glory in the eyes of lake underwriters; not because the release of the ship would have been a difficult problem if there was plenty of time for the work, but it was necessary to count time by minutes, on account of the probability of unfavorable weather, and when the Donnellys went to the wreck they went there prepared for the job which they had in hand. They made certain of providing plenty of pumping capacity and they used it to the best possible advantage. On the second day after they reached the wreck they had eight pumps between decks connected with the steamer's boilers and in shape for most effective service. The pumps included three 12-inch rotaries, two 10-inch Worthington horizontals, one 10-inch centrifugal, and one 16-inch horizontal. But the most advantageous feature of the job, and that which worked to best advantage, was the plan of clearing the grain from the tank tops and then forcing bags of cement down on the breaks in the ship's bottom, thereby making the water bottom reasonably tight."

Travel the road whose service is great,
The one that offers a holiday rate,
Where trains are fast and "up-to-date;"
You know, of course, the Nickel Plate. 404—Dec. 31

MARINE REVIEW

DEVOTED TO LAKE MARINE AND KINDRED INTERESTS.

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The books of the United States treasury department on June 30, 1896, contained the names of 3,333 vessels, of 1,324,067.58 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1896, was 383 and their aggregate gross tonnage 711,034.28; the number of vessels of this class owned in all other parts of the country on the same date was 315 and their tonnage 685,204.55, so that more than half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1896, was as follows:

	Number.	Gross Tonnage.
Steam vessels	1,792	924,630.51
Sailing vessels and barges	1,125	354,327.60
Canal boats	416	45,109.47
Total	3,333	1,324,067.58

The gross registered tonnage of the vessels built on the lakes during the past six years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30.	1891	204	111,856 45
" " "	1892	169	45,968.98
" " "	1893	175	99,271.24
" " "	1894	106	41,984.61
" " "	1895	93	36,352.70
" " "	1896	117	108,782.38
Total		864	444,216.36

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC. (*From Official Reports of Canal Officers.*)

	St.Mary's Falls Canals.			Suez Canal.		
	1896*	1895*	1894	1896	1895	1894
Number of vessel passages	18,615	17,956	14,491	3,409	3,434	3,352
Tonnage, net registered	17,249,418	16,806,781	13,110,366	8,560,284	8,448,383	8,039,175
Days of navigation	232	231	234	365	365	365

*1895 and 1896 figures include traffic of Canadian canal at Sault Ste. Marie.

Although prices are low in all branches of the iron industry, production is very heavy, and it is quite evident that the big concerns look for a large business in 1898. Voluntary advances in the wages of miners throughout the Lake Superior ore region are undoubtedly made with a view to rebuilding the stock piles that have been generally cleaned up. Managers of the big mines in the vicinity of Ishpeming, Mich., have taken a firm and commendable stand with their workmen. When labor was scarce about the close of navigation, wages were advanced at the Minnesota mines, where no attempt was made by the labor agitators to enforce unsatisfactory rules in the mines. Advances would also have been paid in the Michigan districts, but when the mine owners were about ready to increase wages the labor leaders began preparations for a strike that was to be ordered about the first of the year unless certain terms which they proposed were agreed to. The following dispatch from Ishpeming shows that, although the workmen refused to act upon the strike proposition of the union leaders, the mine managers have shown a very liberal spirit: "The attempt of the mine workers' union to force the companies to grant employees a raise of pay was unsuccessful. Very few members came out to cast ballots to decide whether or not a walkout should be declared. The great majority of those who voted were opposed to the proposition. In consequence of the union's failure to carry out its threat, the mine managers decided to increase wages 10 per cent.. dating back to Dec. 1. This will place the lowest pay of common laborers at $1.35 and the average earnings of miners will be $2 or over. It is generally thought that the union will now go to pieces, as members assert that they have become tired of supporting the leaders."

In view of the desire of the president and the navy department to build new docks and improve dock yards, rather than increase the number of naval vessels, it is not at all probable that the present congress will provide funds for more than one new battleship. Heretofore the completion of new vessels has sometimes been delayed six months or more, on account of delay in preparing plans after appropriations had been secured, but this year plans for the single battleship for which an appropriation is expected have been perpared in advance, and if the money is forthcoming bids will be sought promptly from the ship builders. The new ship is to have a speed of not less than 16 knots. She will have a length of 372 feet by 73 feet beam, and a mean draught of not more than 24 feet on a displacement of 11,500 tons. The plans of the engineers call for twin screws and vertical triple expansion engines, with a maximum indicated horse power of not less than 10,000. The heaviest guns in the two fore and aft turrets will be of 13-inch caliber, which, according to the plans of the ordnance officials, is the proper type for the big battleships, while a large secondary battery of rapid fire and machine guns is to be arranged along the broadsides. The turrets will be of the reflective type, and an interesting feature of the ship is the more general use of electricity, including the appliance of the power to the turning of the turrets. The secondary battery under the plans will be the heaviest carried by any battleship designed for the new navy.

Congress should at the present session consider very fully the proposition that foreign ships be asked to bear a greater share of the maritime expenditures in this country than is required of them at present. The expenses which the United States incurs for maritime purposes amount annually to about $20,000,000. As showing the inequality of burdens in our system of raising money on ships, the commissioner's report states that, although three-fourths of the foreign tonnage in foreign trade entering and clearing ports of the United Kingdom is British shipping, all vessels are taxed to maintain the light-house service and for other maritime purposes in that country. We, on the other hand, are far more liberal to foreigners. Notwithstanding three-fourths of the tonnage engaged in foreign trade entering and clearing ports of the United States is foreign, this class of shipping is asked to contribute only about $650,000 of this country's expenditure of $20,000,000. In fact, the United States are more liberal toward foreign shipping than foreign governments are toward their own shipping.

Marquette's concrete breakwater, constructed under the direction of United States Engineer Major Clinton B. Sears of Duluth, is attracting a great deal of attention among engineers who are interested in this kind of work. Major Sears' report for the year ending June 30, 1897, contains a large amount of valuable information regarding this concrete structure, supplemented by numerous illustrations. Capt. Abbott of the army engineer corps, who is in charge of the Minneapolis district, examined this breakwater recently and said of it: "It is a splendid piece of work. It is subjected to unusual conditions. For instance, it may be incrusted with several feet of ice when along comes a storm and peels every bit of ice off as clean as if it were melted. Then in a day or so it will be all frozen up again. The pounding of the waves and masses of ice is tremendous. But the breakwater is standing as solidly as if it were made of granite. There is not a sign of roughness, no chips cut out; every angle is as clean as if newly cut from solid rock. It shows what I wanted to find out—whether concrete work is to be a success in this climate."

Lord Brassey of the British admiralty writes of the "Position of the British Navy" in the Review of Reviews for January. Referring to the naval review which occurred during the jubilee celebrations he says: "The fleet mustered at Spithead included fifteen first-class and six second-class battleships; eleven first-class, twenty-seven second-class, and five third-class cruisers; gun vessels, twenty gunboats, thirty torpedo-boat destroyers, twenty sea-going torpedo boats, eight special-service vessels, and eighteen training ships, including six corvettes, four ironclads and eight brigs. The displacement of the ships aggregated over half a million of tons. The number of guns was over 2,000, including more than 500 heavy quick-firers. The speed of the battleships averaged about 17½ knots, while that of the cruisers was about 19½ knots. With some twelve exceptions all the vessels have been designed, laid down, launched, and completed in a period of eight years."

A dispatch from Pittsburg says that plans are being prepared by the Carnegie Steel Co. for the erection of a universal plate mill at the Homestead steel works which is to be the largest in the world. The Carnegie company recently purchased additional ground at Homestead, giving that concern a total frontage of two miles on the Monongahela river. Work on the new universal mill will begin in a few weeks. The company is building ten 50-ton open hearth furnaces at Homestead. They will be completed by the first of the year, as will the company's new girder rail plant. All these additions will give work to a total of nearly 1,000 men. With these increases the big Pittsburg interest will have an investment of $15,000,000 in its Homestead plant alone, the largest investment in a single steel plant in the world, save the Krupp plant at Essen.

The tremendous preponderance of exports in our foreign commerce is a frequent subject of congratulation in trade circles. The month of November showed an excess of merchandise exports over merchandise imports of $64,277,959, and the record for December is likely to run about the same, if not a little more strongly in our favor. The balance of trade on merchandise exports and imports for the calendar year 1897 is expected to come very close to $350,000,000 in favor of this country. This will surpass anything ever before shown in our history. Taking the twenty-seven months ending with December, the aggregate balance of trade in favor of the United States will be over rather than under $800,000,000. These are stupendous figures. Looking at them, it is little wonder that American bankers are loaning money in Europe.—Iron Age.

Referring to the record of eighteen and a quarter millions of freight (net tons) passed through the St. Mary's Falls canal during the season just closed, the Engineering & Mining Journal of New York says: "These facts serve once more to show the enormous value of the lake waterways, without which it is safe to say that the iron industry of the United States would never have been able to reach its present commanding position. The future seems to present every prospect for the growth of the lake traffic; and new economies are continually being introduced into its management. Nowhere else in the world are large quantities of freight handled so quickly and at so low a cost."

A large steamer and tow barge of the kind now building in lake ship yards would move in two trips a quantity of iron ore equal to the capacity of all vessels that have been lost on the lakes during the past season. It will thus be seen that the tonnage lost is not of sufficient importance to be taken into account in calculations regarding lake freights. The thirty-five vessels that were lost in 1897 were capable of carrying only 21,450 net tons, or about 18,000 gross tons, and their aggregate value was only $372,900, or about the value of a large steel steamer and tow barge of modern type.

In view of the very small portion of Lake Superior commerce that is carried on in Canadian vessels, the expense of building and maintaining the Canadian canal at Sault Ste. Marie is certainly a great burthen on the people of the Dominion. During the season just closed the tonnage of vessels passing through this canal was only 3,804,361, against 13,815,572 in the United States canal. But the most discouraging feature of the canal reports to the people of Canada is the fact that the tonnage of all Canadian vessels passing through their canal was only 282,089.

Passing of the Sailing Vessel.

We all know, in a general way, that the decline in glory of the packet fleet began years ago, and has steadily progressed ever since; but we also know that new sailing schooners and other vessels are being built to-day having greater carrying capacity than many steamships, and greater than the most ocean steamers of a former period. Such ships carry freight at wonderfully low rates; and we cannot, therefore, correctly judge of the influence of steamships upon water transportation by the study of isolated or peculiar conditions. The subject must be viewed from its broadest points of observation in order to see how steam is affecting the mercantile fleets of the world. Statistics recently published by the Bureau Veritas afford the opportunity not only of tracing the effect of steam in supplanting sails all over the world during a long period of years, but they show, in addition to the decrease of sailing tonnage and the increase of steam tonnage, the relative rate of change in the merchant navies of different nations and the total capacity of all. Several surprising facts may be noted in these tables. The first striking observation is that the total registered tonnage of the world for the first time passes the high-water mark of a round twenty million tons. The increase in 1897 is greater than that of any other year, being 424,000 tons as compared with 263,000 tons in 1891, which was considered a record-breaking year. Then again, the increase in steam tonnage was 242,000 tons greater than the total increase, owing to a decrease of that amount in sailing tonnage. In Great Britain alone there is a disappearance of no less than 506,000 tons of sailing tonnage in this year's returns. This is more than twice the net decrease for the whole world, and shows that in some countries there has been an opposite movement offsetting the decline in construction of sailing vessels in England. In France, for example, the building of sailing ships during the year has proceeded apace, no less than 16,139 tons being reported on the stocks on Oct. 1, while in Great Britain the total at the same date on the stocks was 6,949 tons. The tonnage of steam vessels of Great Britain is now two-thirds of the entire registered tonnage, or 6,741,000 tons, being an increase of 328,000 tons during the past year.

The following table, compiled from statistics published by the Bureau Veritas, show steady growth of all the merchant navies of the world put together from 1889 to 1897 inclusive:

AUTUMN OF	STEAMERS. Net Registered Tons.	SAILERS. Net Registered Tons.	TOTAL Net Registered Tons.
1889.	7,748,000	11,081,000	18,829,000
1890.	8,286,000	10,540,000	18,826,000
1891.	8,872,000	10,217,000	19,089,000
1892.	9,226,000	10,093,000	19,319,000
1893.	9,674,000	9,829,000	19,503,000
1894.	9,994,000	9,547,000	19,541,000
1895.	10,360,000	9,324,000	19,684,000
1896.	10,761,000	9,136,000	19,897,000
1897.	11,427,000	8,894,000	20,321,000

In examining the detailed statement of countries it appears that Germany holds the second place as regards steam tonnage, with 1,034,000 tons; the United States come next in net tonnage, with 535,000 tons. Japan appears at the foot of the list, with 192,000 tons; but she is pushing Italy (218,000 tons) closely, and will probably soon pass her in the race.

Again, by looking backward a score of years, we behold a wonderful change in the aspect of the British merchant marine. In 1876 the British flag waved from the masts of 20,265 sailing vessels, with a registered tonnage of 5,807,000 tons; to-day there are only 8,545 Engl sh sailing ships, with 3,098,000 tons, a falling off of nearly 50 per cent. in tonnage and nearly 60 per cent. in the number of ships. The decrease in sailing ship tonnage during the past year, amounting to 506,000 tons, suggests the query, What becomes of all the ships that disappear from these registers? Do they go down to the sea in unsafe condition, caused by overloading, by want of proper supervision, by poor seamanship or by "acts of God?" To properly answer this question is, we confess, beyond our ability. A disappearance of half a million tons in one year out of a total of about 9,000,000 tons seems a large proportion; but when we take into consideration the fact that new inventions and improvements in the machinery and construction of steam vessels are continually being made, while the day for invention and improvement in sailing vessels is past, we can see that many sailing vessels are undoubtedly abandoned because they have proved to be unprofitable property to hold. The total increase in steam tonnage in the world during the past year is even larger than appears from the table, for the reason that 267,000 tons represented the loss, from various causes, in steamships. It is calculated that if the change from sail to steam should continue at its present rate "the last sailing ship would disappear from the face of the ocean a little more than twenty-seven years hence;" but this is very unlikely.—Philadelphia Record.

A steamer for carrying petroleum in bulk will be built by the Birgsung Engineering Co. of Stockholm, Sweden. The vessel was ordered by an Armenian merchant for the Caspian sea trade. The length is 280 feet, the engines are to be of 1,200 horse power, and the contract speed 10½ knots. The price is to be about $135,000, and the time of delivery next May.

A bill that will be given consideration by the present congress provides that $100,000 be appropriated to renew and to put into proper condition for a training ship, or such other use as the navy department may determine, the old frigate Constitution, now lying at the navy yard at Boston.

A supplement to the United States Standard Register of Shipping (Red Book), published by the United States Steamship Owners', Builders' and Underwriters' Association of New York is at hand. It contains particulars of all ships built on the lakes of late, a number of which have been built in accordance with the rules of the association.

Travel at holiday rates via the Nickel Plate road, Dec. 24, 25 and 31 and Jan. 1. Tickets are good returning until Jan. 4, 1898. 406—Dec. 31

English Influence Detrimental to our Industries.

Charles H. Cramp says that English influence and the acceptance of English ideas and doctrines in this country form the great underlying cause of prevailing financial and industrial conditions here and are especially detrimental to the ship building industry. In a letter to the Manufacturers' Club of Philadelphia, dealing with the subject of our merchant marine, Mr. Cramp says: "I have no patience with those seeking to inculcate the doctrines, the effect of which would be to aggrandize foreign peoples or nations at our expense, or with those who use the epithet jingo and jingoism to describe everybody and everything not Anglomaniac or not un-American. You will pardon me, however, if I say that to a very great, and from my point of view, deplorable extent, American views and American doctrine seem unpopular in this country. During the last quarter of this century, or say since the end of the civil war, the growth of English influence, the spread of English ideas and the acceptance of English doctrines in this country has been nothing short of marvellous. I lack time here to go into discussion of the causes of this state of affairs. Its truth as a fact will hardly be questioned by any keen observer of current events. English influences, ideas and doctrines penetrate every walk of life and every branch of activity in the United States. I do not think it too much to say that at no time prior to the declaration of independence during the colonial period of our history, was our moral and intellectual subjection so complete as it is now. It has come to pass that many American statesmen and journalists seem to await expression of British views on any subject connected with our national existence or attitude before making up their minds."

As an example of English influence Mr. Cramp pointed out the pending question of the annexation of Hawaii. He said the governing power in these islands, realizing the impossibility of much longer maintaining themselves against the powerful nations of Europe and Asia, have offered themselves to our government. Mr. Cramp contended that the acceptance of this gift was the wise and proper course to take. He spoke about the opposition of a section of the American press to this action, and declared that, sifted to the bottom, the opposition has no foundation, except that the possession of the islands is ardently desired by Great Britain, and she is exhausting her ingenuity to acquire them without incurring the hostility or resistance of the United States. In view of the settled policy of the United States towards these islands in the past, Mr. Cramp contended that if we refuse to accept their overtures for union, we could have no further right to interfere with their future freedom of action or selection of their own destiny. If the pending treaty is rejected, he declared that the islands, left to be the prey of rapacious nations, will offer a similar treaty to Great Britain, and he did not see what right the United States would have to object. Mr. Cramp asserted that the efforts of the Hawaiian government as shown by the pending treaty, were towards suitable government and permanent security. Great Britain, he said, covets the islands and every American statesman or newspaper which opposes annexation is simply pulling English chestnuts out of the fire.

Recurring to the question of the merchant marine, Mr. Cramp spoke of the manner in which Germany has come to the front as a maritime nation within the last ten years. Until that country began to build and own ships on a large scale, her rank in the carrying trade of the world was secondary and subordinate. In concluding his letter, Mr. Cramp said: "The great change that has occurred is nearly coeval with the reign of the present emperor. From his accession till now he has been a most indefatigable promoter of the foreign commerce and the shipbuilding interests of his empire. It is hardly too much to say that the capacity of German ship yards to build such vessels as the Wilhelm der Grosse is due almost entirely to the fact that he has exerted both his personal influence and his imperial power to promote that industry in Germany."

In this connection Mr. Cramp referred to the German emperor's last effort to promote Germany's commerce and extend the scope of German industries by establishing a permanent foothold on the Asiatic mainland.

Combined Boiler Installation.

Some time ago the English firm, Yarrow & Co., constructed a number of water tube boilers for the Dutch navy, to be worked in conjunction with ordinary return tube boilers in three cruisers, Zeeland, Holland and Friesland, which were to be built in Holland by the Figenoord Ship Building & Engineering Co. of Rotterdam. We now hear that the Friesland has completed a most successful four hours' full-power trial, upon which 10,416 indicated horse power was developed with 147.2 revolutions. In each ship there are eight straight tube Yarrow boilers and two return tube boilers. The former have tubes 5 feet long between drums and 1⅛ inch diameter, arranged in ten rows on each side of the furnace. The total grate area of each boiler was designed to be 40¼ square feet, and the total heating surface 2,017 square feet. It was intended that the total horse power should be 9,250, indicated, of which steam for 2,000 horse power was to be supplied by the shell boilers and 7,000 from the water tube boilers. It is seen, as a result of the trial, that this estimate has been exceeded, and it may now be of interest to state the respective weights of the boilers. The two cylindrical boilers in each ship are estimated to weigh 120 tons, whilst the eight Yarrow boilers with water weighed 88 tons. In both cases firebars and fittings are included, but not chimneys. The return tube boilers, in terms of the power to be developed, were, therefore, four times as heavy as the water tube boilers. In regard to space occupied, it was found that three of the Yarrow boilers occupied about the same floor space as the two return tube boilers. The fact that 1,000 horse power above that originally estimated was obtained on trial may upset the above calculations as to ratios, and would do so unless both types of boiler supplied steam additional to that estimated in equal ratios. It is extremely probable, however, that the extra steam came chiefly from the water tube boilers.—Engineering, London.

An assorted box of pencils, always appreciated in a newspaper office, is the most forcible reminder of the Christmas season that comes to the Marine Review. The Joseph Dixon Crucible Co. of Jersey City, N. J., famous throughout the world for the high quality of its various products, is kind enough to remember us in this way each year.

Around the Lakes.

The Milwaukee winter fleet comprises sixty-eight steamers, twenty-one barges and thirty-nine schooners—a total of 128 vessels.

The matter of securing telegraph and telephone communication between the Manitou islands and Michigan main land is again being agitated.

Capt. Albert S. Fitts will represent Toledo Harbor, No. 43, Association of Masters and Pilots, at the meeting of the grand lodge, to be held in Washington next month.

The sum of $78,104.05 was expended in the operating and care of St. Mary's Falls canal during the last fiscal year. The expenditure for the present fiscal year will probably exceed that of last by a considerable amount.

Capt. James Reid's large wrecking tug Protector has been engaged by the Flint & Pere Marquette Railway Co. for service at Ludington during the winter, to assist the company's steamers through the ice whenever necessary.

Capt. Sam Neff of Milwaukee has sold the scow A. R. Kellogg to O. S. Richardson & Co., Chicago coal dealers, for $500, and the new owners will in all probability put the craft in shape for coaling steamers in Chicago harbor.

A note from Buffalo says that the dry docks at that point have considerable repair work under way. The Lackawanna, Avon and tug Maytham are at the Union yard, and the Kearsarge, Rhoda Emily and Tacoma at the Mills dock.

A notice from the hydrographic officials announces that the boulder on which the City of Bangor struck near the Canadian canal at Sault Ste. Marie on Dec. 12 has been removed, and there is now 19 feet of water between the piers at the lower entrance to the canal.

A dispatch from Pittsburg says that the Youghiogheny Gas Coal Co. of Cleveland, of which D. R. Hanna is president and T. E. Young vice-president, has purchased 459 acres of coal land in Forward township, Allegheny county, adjoining the Manown mine. The price paid was $75,000.

At the annual meeting of Detroit lodge, No. 7, Ship Masters' Association, the following officers were elected: President, A. J. McKay; first vice-president, H. C. McCallum; second vice-president, Wm. Roach; treasurer, Hiram Still; financial secretary, C. L. Wilson; marshal, Jas. Watt; warden, Wm. McLean; sentinel, Henry Berlin.

New officers of the Cleveland harbor, Association of Masters and Pilots, elected a few days ago, are: Charles A. Benham, captain; John Morrille, first pilot; Fred Hale, second pilot; Harry Doville, captain's clerk; Samuel W. Gould, purser; Harry Doville, F. Place and William Sommerville, trustees. Capt. Charles A. Benham was elected delegate to the meeting of the grand harbor, which will be held in Washington next month.

Capt. Fred L. Pope, assistant inspector of hulls at Buffalo, has been promoted to the position of inspector, to succeed the late Capt. E. M. Marion. Capt. Pope was Capt. Marion's assistant and is thoroughly familiar with the workings of the office, he having been in the service for seven years. The position of assistant made vacant by the promotion of Capt. Pope will be filled from the civil service list, an examination for which will be held in February.

Grand preparations are being made for the annual reception and ball of the Cleveland lodge, Ship Masters' Association, which will be held Jan. 12. The Grays' armory, one of the finest buildings of its kind in the city, has been secured for the festivities this year. Members of the executive committee are: Captains Clinton G. Ennes, Richard Neville, W. A. Collier, John N. Smith, Ralph Bryns, Thomas Jones, William Gerlach, Henry Stone, Albert Greenley, Claude M. Ennes.

It is more than probable that there is no truth whatever in the dispatch from Duluth stating that the Oliver Mining Co. (Carnegia interest) had leased an undeveloped mine on the Vermilion range near the Chandler and Pioneer, and owned by John G. Brown and A. M. Miller. The Carnegie interest is not buying undeveloped property on the Vermilion range. The Duluth dispatch stated that the lease is for 20 years, with a royalty of 30 cents a ton, a bonus of $30,000 and a minimum output of 100,000 tons.

Grain now afloat at Chicago aggregates 2,426,000 bushels. At this time a year ago there was only 214,000 bushels in vessels. A number of vessels, it is said, are now being loaded with Leiter wheat, on which the clique will pay 3 cents a bushel for winter storage and delivery at Buffalo. Most of the grain, it is claimed, is loaded by the vesselmen under a contract with the clique, which provides that the grain is either to be delivered at Buffalo or discharged again for shipment by rail. If the latter disposition is made of it the clique is to receive a rebate.

Officials of the weather bureau have asked congress for a special appropriation of $5,000, for the purpose of erecting a brick and stone building on the United States government reservation between the two locks at the Sault, to be used as an office for weather bureau purposes. There is little probability of appropriations of this kind being made by the present congress, on account of the policy of economy that will be pursued, but it would seem that if the weather bureau is really in need of special quarters at Sault Ste. Marie, provision could be made for offices in the spacious new building constructed in connection with the Poe lock.

A dispatch from Duluth says of the shut-down at the Pioneer mine, a valuable Vermilion range property controlled by Oglebay, Norton & Co. and others of Cleveland: "Affairs at this mine are unchanged, except that those who thought its declared intention of suspending work a bluff are of the contrary opinion now, for the pumps are pulled, the trams taken up, the shops boarded up and the machinery painted. The lessees say they cannot operate economically unless they can mine more than the probable amount to be allotted them in the next pool. They have now on surface 200,000 tons, while their allotment will not be likely to be over 250,000 tons. They want an extension of the lease and a sliding scale of royalty, neither of which will be given by the freeholders. It may be a long shut-down."

Another View of the Shipping Question.

In another part of this issue extracts are printed from a letter submitted by Charles H. Cramp to the Manufacturers' Club of Philadelphia, in which Mr. Cramp says that English ideas and doctrines penetrate every walk of life and every branch of activity in the United States, and that this relation between England and this country forms the greatest underlying cause of prevailing financial and industrial conditions here, and more particularly in the ship building industry. Commenting on Mr. Cramp's letter, the Boston Herald says:

"This statement from Mr. Cramp sounds a good deal like statements that were made years ago by Mr. Cramp's predecessor, Mr. John Roach. Mr. Roach used to hold that it was a national disgrace that the American people should have so much of their ocean transportation carried on by vessels sailing under the English flag; that this disgrace could be brushed away if the government would vote large subsidies to American shipping, and then he (Roach) would agree to build any number of ships and steamers to supply the needs of customers drawn into the business by the hope of getting the subsidy. In Mr. Roach's opinion, no citizen of this country could be a patriotic American and refuse to accord to Mr. Roach this opportunity to engage in a highly profitable business. It is, of course, needless to remark that this is only another illustration of the sentiment conveyed in the phrase, 'The old flag and an appropriation.' There are a large number of gentlemen in this country who are earnestly desirous of exploiting their patriotism and of having the country made tremendously patriotic when such outbursts have the effect of bringing hundreds of thousands or millions of dollars into their own pockets.

It has been said that our ship builders are in a position to build better and cheaper vessels than can be built anywhere else in the world; but if that is the case, we cannot understand why these builders, such as Mr. Cramp, are so strenuous in insisting that the laws which now prevent us from purchasing foreign-built ships should be maintained, for certainly if we can supply ourselves with tonnage of a better character or at lower prices on this side of the Atlantic than it can be bought elsewhere, there need be no fear that any amount of foreign built tonnage will come under the American flag. If it is demonstrated by practical experience that American sea-going tonnage is now as cheap as any built elsewhere, and that it is not this obstacle that prevents us from building up a great ocean carrying trade, then it will be possible to successfully urge the adoption of some plan of subsidizing our merchant marine to equalize the cost of maintenance. Until the opportunity is given us, in the same way that it has been given the Germans, to build up a merchant marine by the purchase of ships of foreign construction, if these are cheaper than home-built ships, it will not be believed that Mr. Cramp's methods are effective, or that his reasons for urging the plan are disinterested. Those who believe that Americans are entitled to a very large share of the ocean carrying trade which the English now possess, and believe that we could obtain these by our greater skill and enterprise if we were given an opportunity to freely acquire the tools of their trade—that is, ships—can hardly be condemned as wanting in love of country. Mr. Cramp, however, is so desirous of lining his own pockets that anything which stands in the way of speedily doing this is looked upon by him as certainly anti-American."

A Very Large Dipper Dredge.

Hingston & Woods, dredging contractors of Buffalo, will have two new dredges next season. The machinery for both will be built by the Bucyrus Steam Shovel & Dredge Co. of South Milwaukee. One of the dredges will be of the dipper type and will be the largest of its kind in this country—probably the largest in the world. The weight of the dipper, which is calculated to scoop up 8 cubic yards, will be 15,000 pounds. The weight of the dipper and a load of earth is calculated at 25,000 pounds. The digging resistance of the dredge will be about 37 tons. The dredge will have double high-pressure 18 by 24 engines, and the two main hoisting gears will be each 12 feet in diameter with 12 inches face. The boilers and hull are to be built at Buffalo. The hull is to be 135 feet long, 44 feet wide and 13 feet deep. The dredge is to be of the boom type, not heretofore seen on fresh water, but common on the seacoast. It is intended for general use on the lakes. The second machinery outfit is for an elevator dredge intended principally to be utilized in canal work. This dredge will be constructed with removable pontoons, so that when engaged in harbor work it will have a width of 33 feet 6 inches, and when going through a canal the width can, by removing the pontoons, be reduced to 17 feet 6 inches, or narrow enough to allow it to pass through locks. There is no elevator dredge now on the lakes, although such dredges have been used in the past. This dredge will have a conveyor 75 feet long that can carry material from one side of a canal to the other and for a considerable distance beyond the towpath. The hull and boilers of this dredge are also to be built at Buffalo. It is expected that the elevator dredge will be ready for service by May 1, and the dipper dredge by June 1.

At the rate of increase that has prevailed during the past two or three years in the commerce of canals at Sault Ste. Marie, the freight tonnage of these canals, which represents only the business of Lake Superior, will exceed 50,000,000 tons ten years from this time.

An up-to-date lithograph map of the Alaskan gold fields, printed in six colors, complete and accurate. If interested, send five 2-cent stamps to advertising department, Nickel Plate Co., Cleveland. Dec. 31, 393.

Army and navy charts of the lakes are kept in stock by the Marine Review, Perry-Payne building, Cleveland.

U. S. ENGINEER OFFICE, DULUTH, MINN., Nov. 30, 1897. Sealed proposals for building substructure for south pier, Duluth Ship Canal, will be received here until noon, Jan'y 15, 1898, and then publicly opened. Information furnished on application. Clinton B. Sears, Major, Engrs. jan. 15

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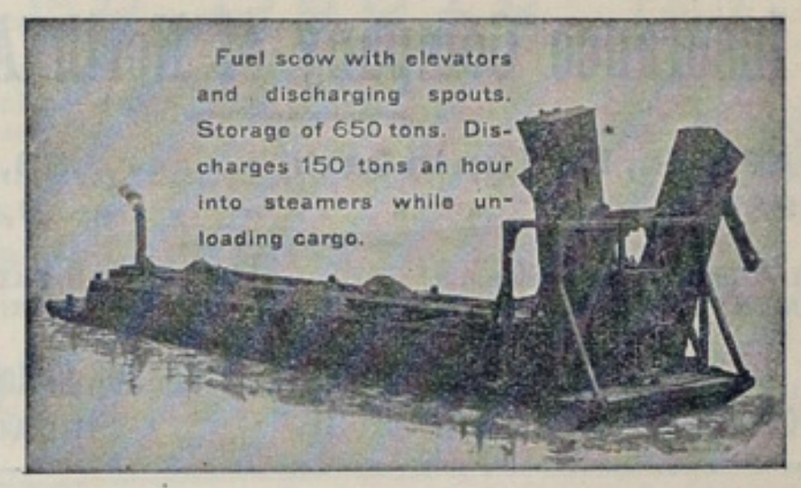
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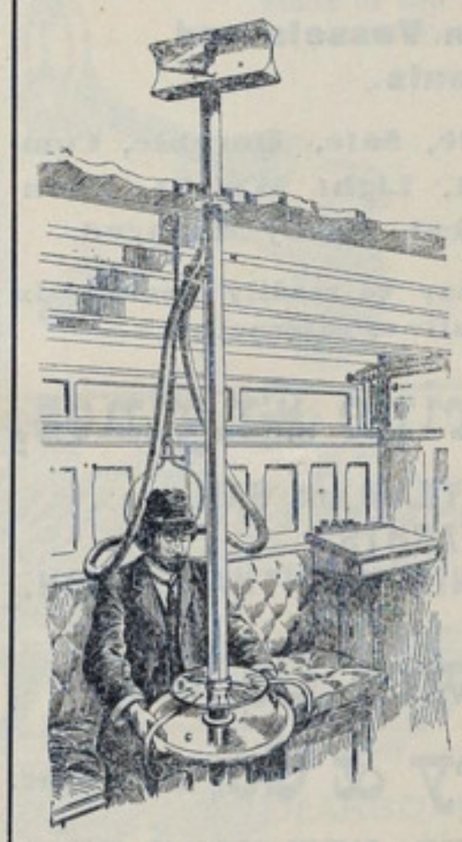

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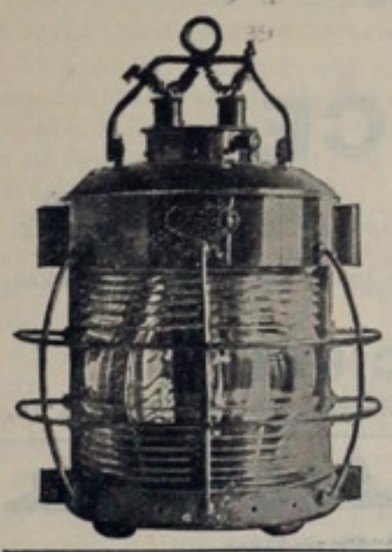

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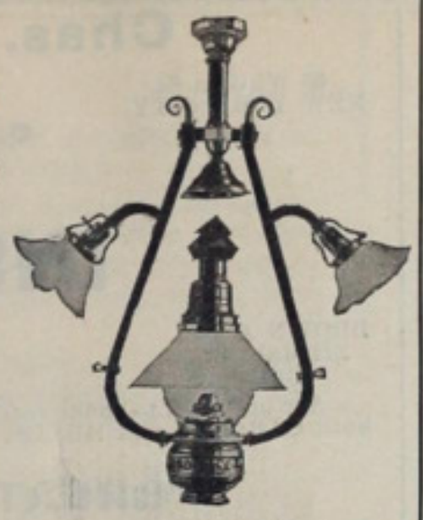

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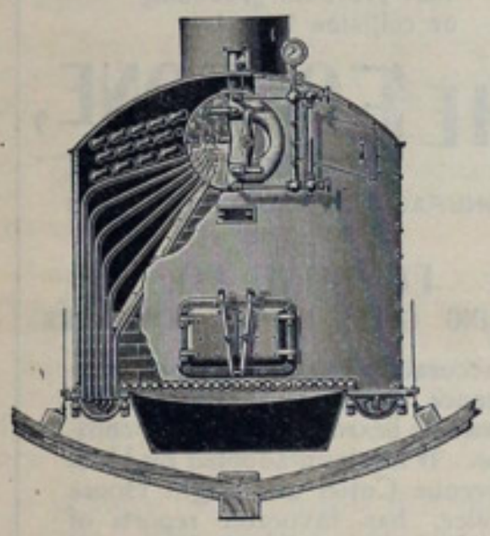

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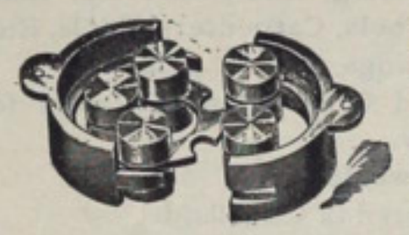

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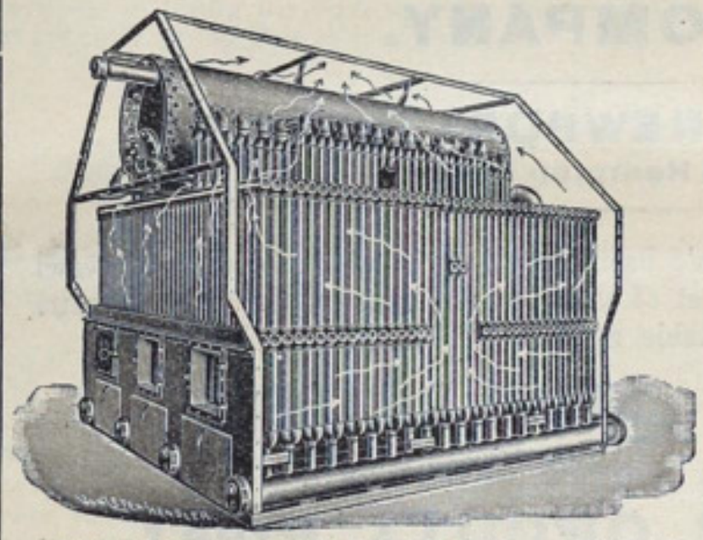

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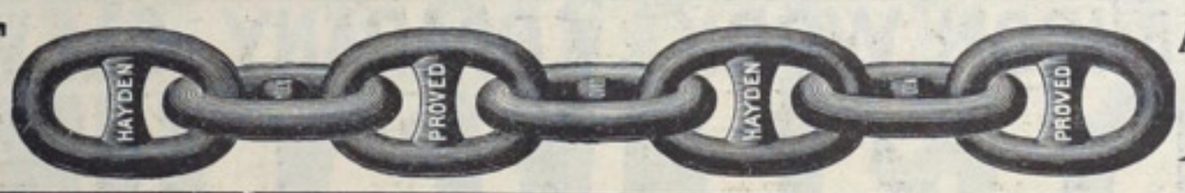

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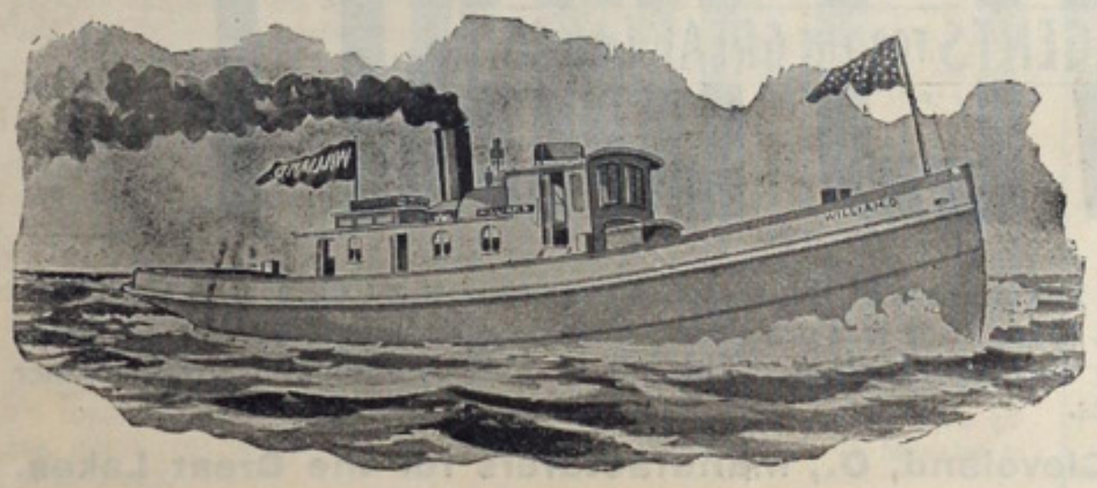

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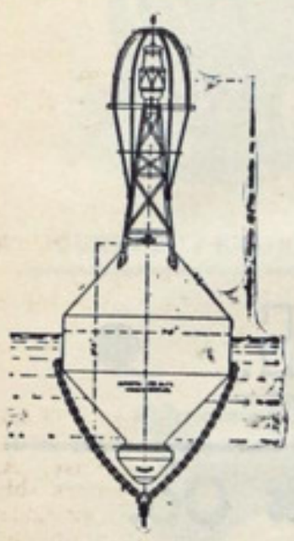

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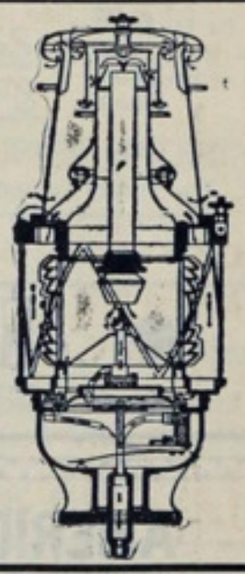

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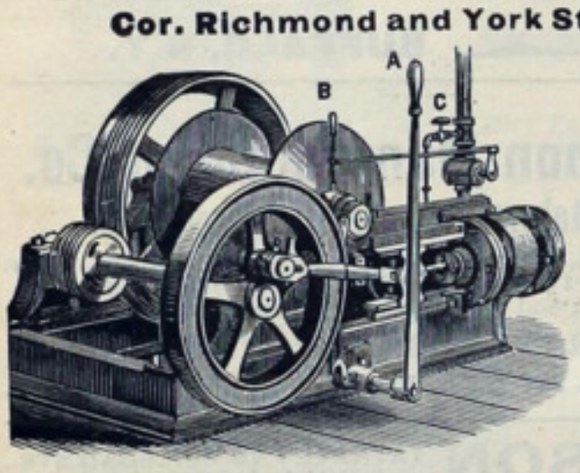

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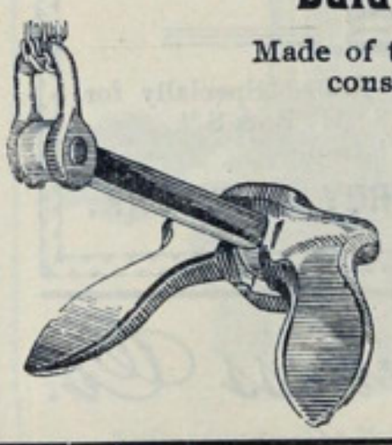

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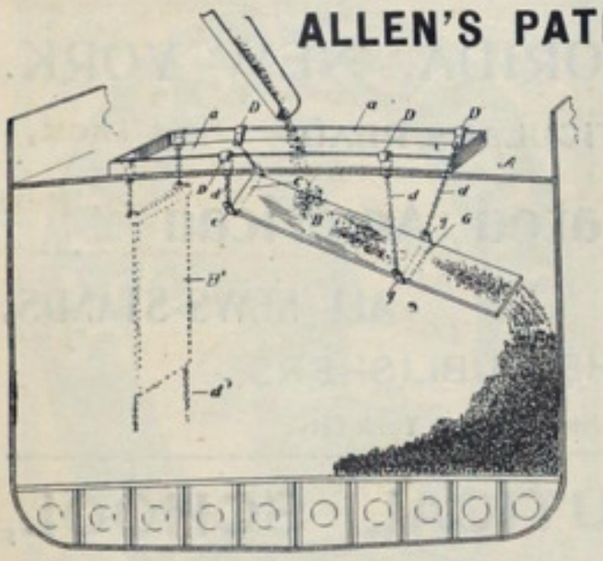

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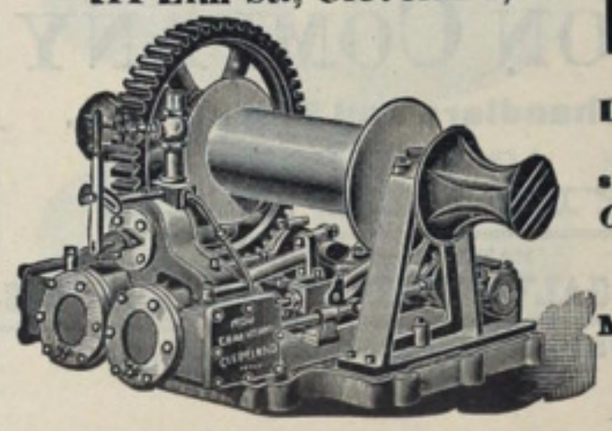

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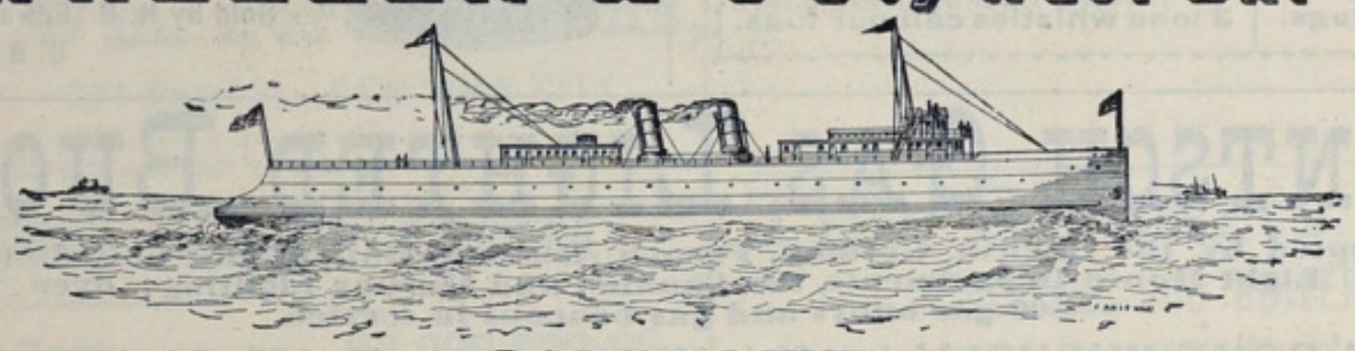

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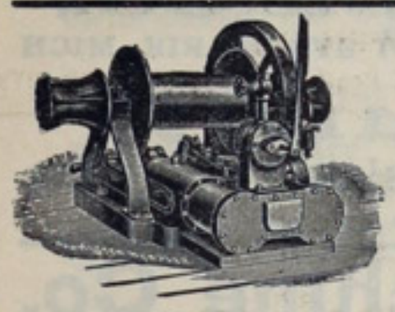

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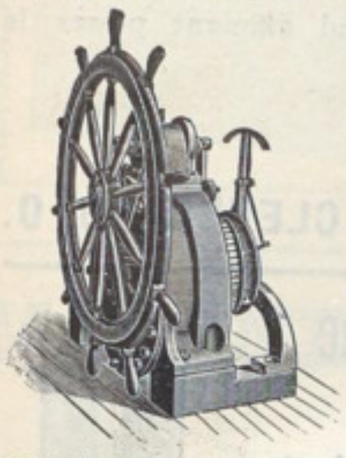

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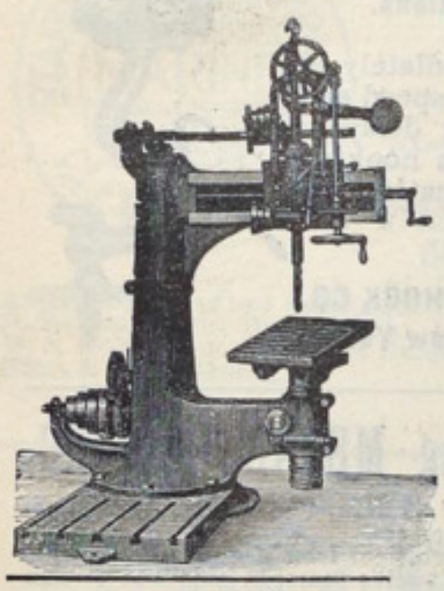

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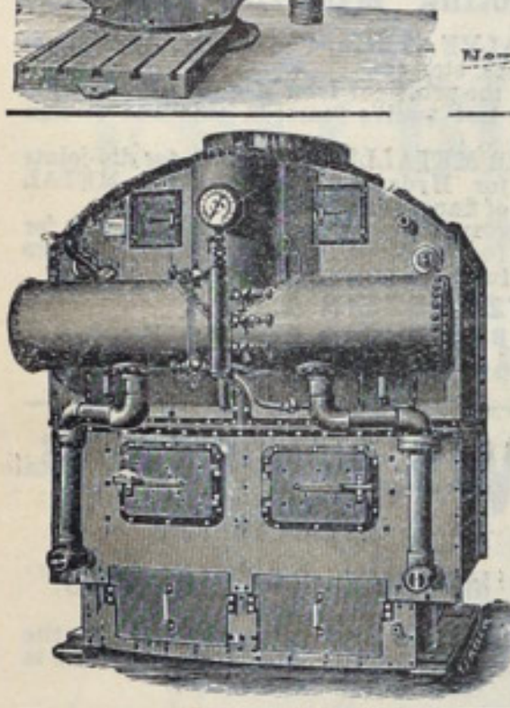

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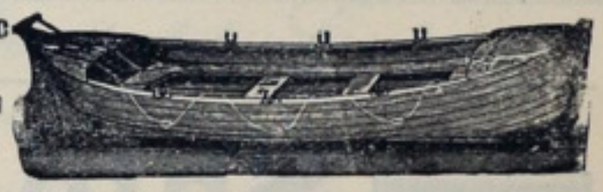

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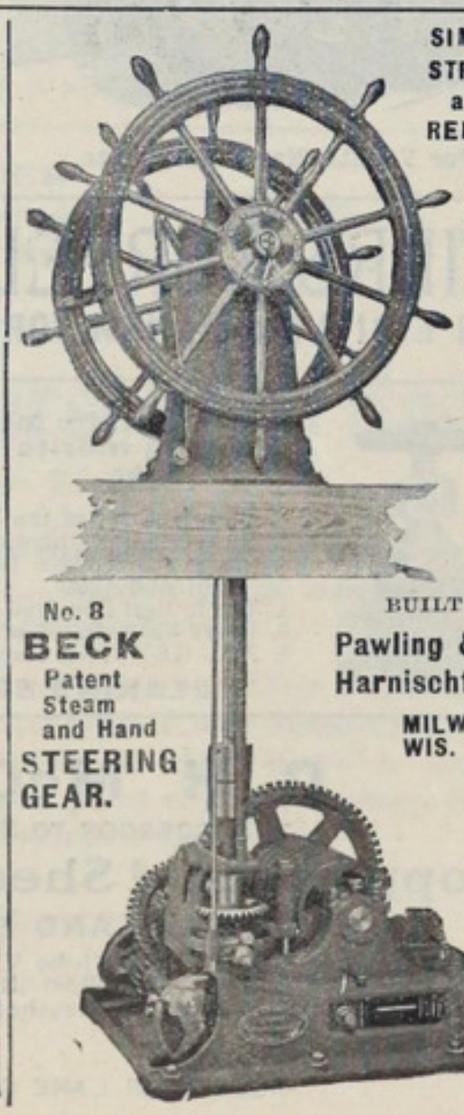

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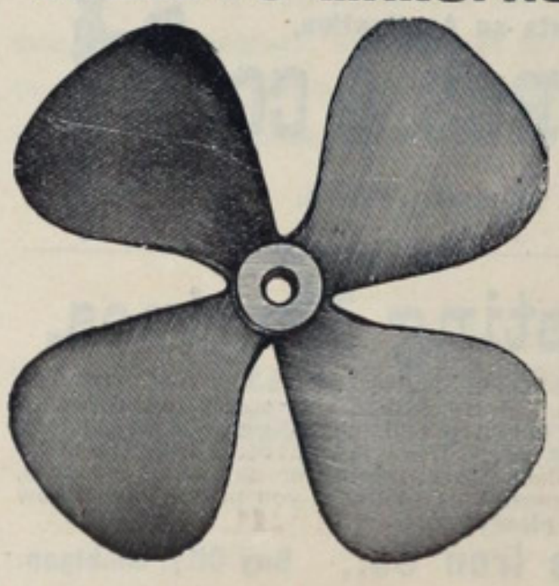

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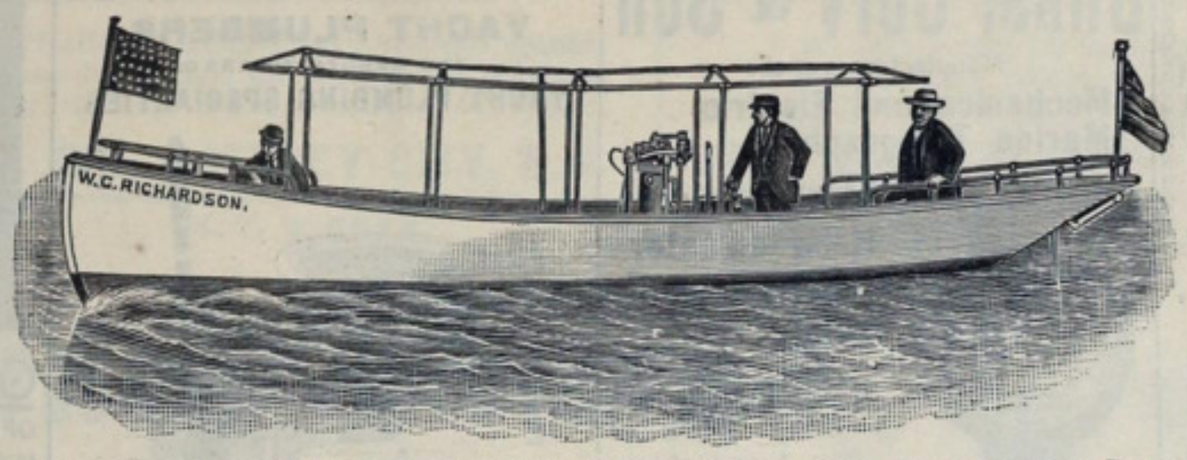

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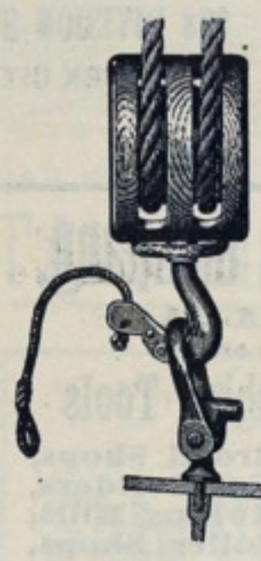

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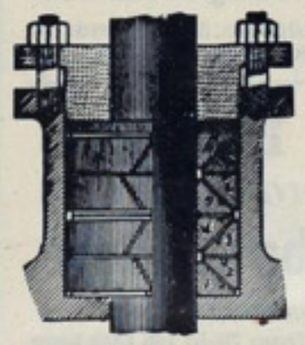

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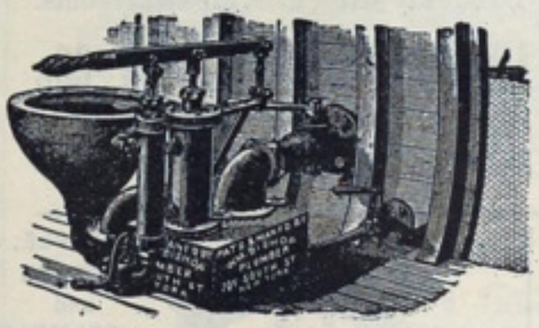

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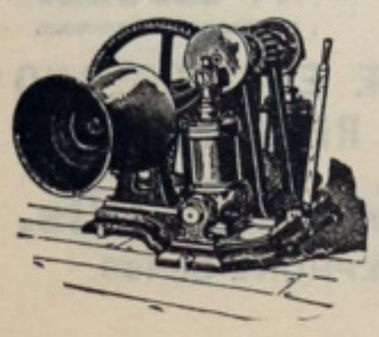

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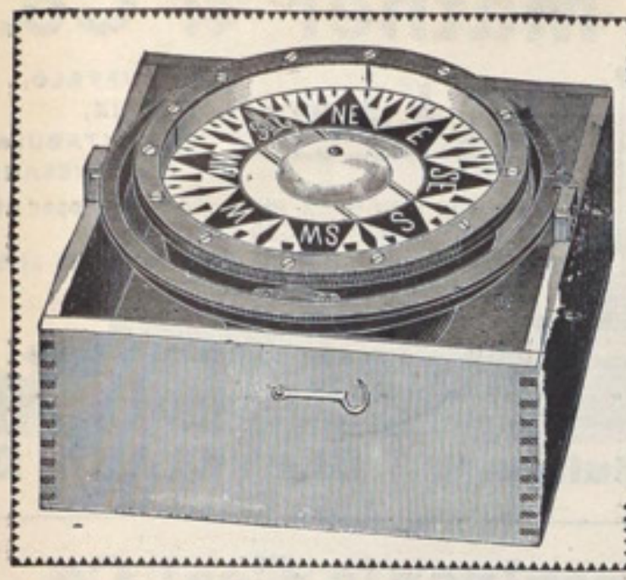

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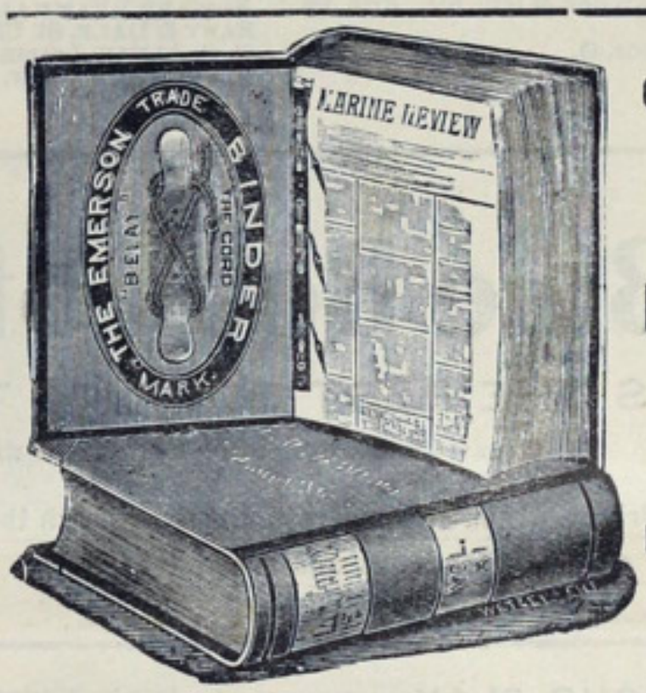

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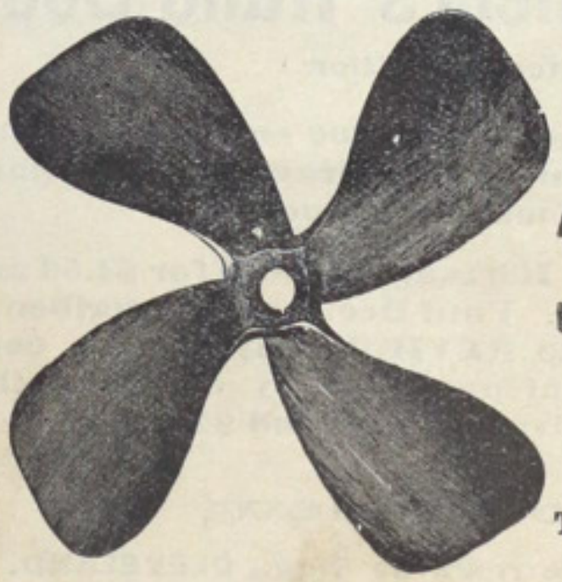

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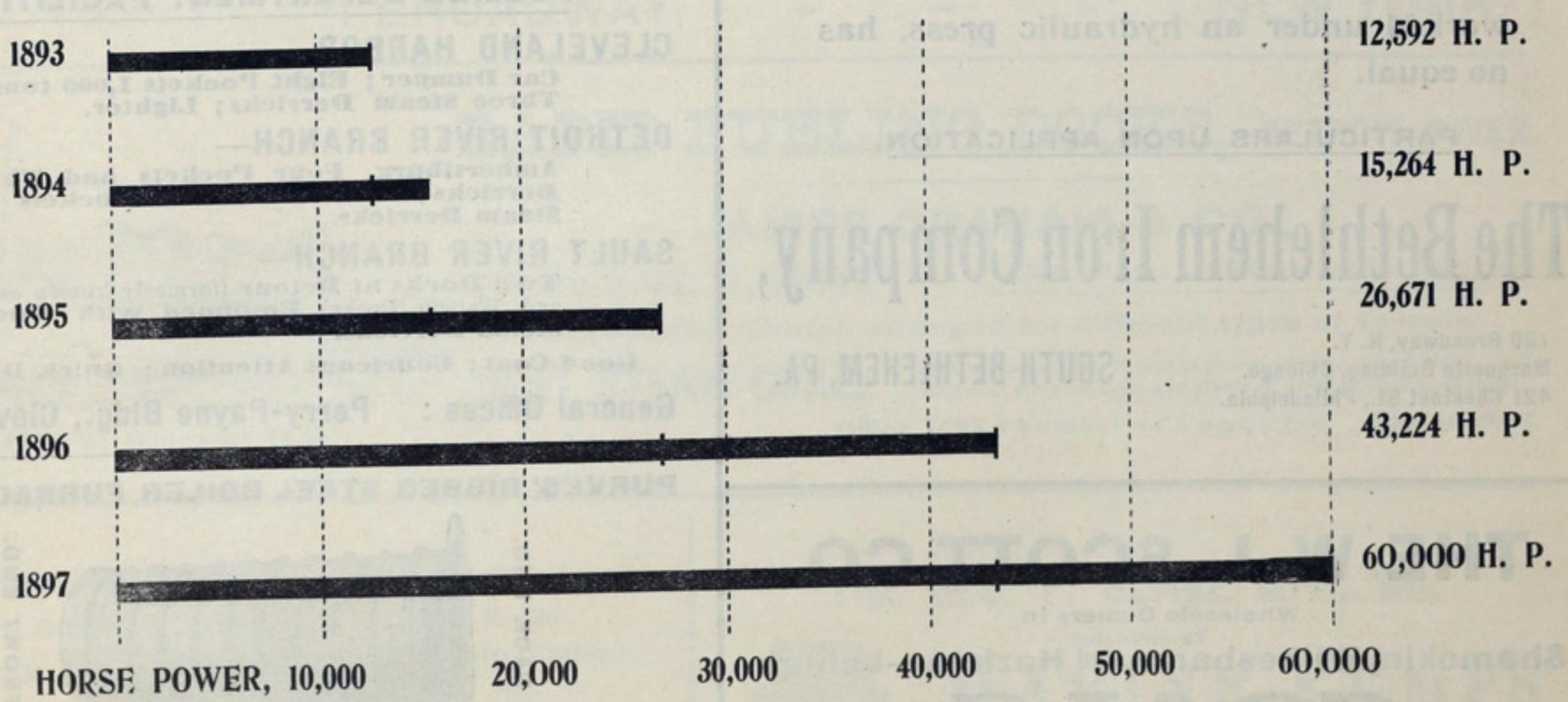

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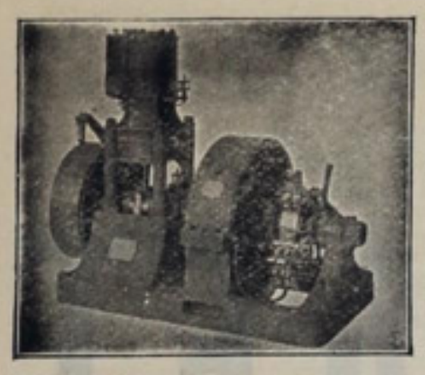

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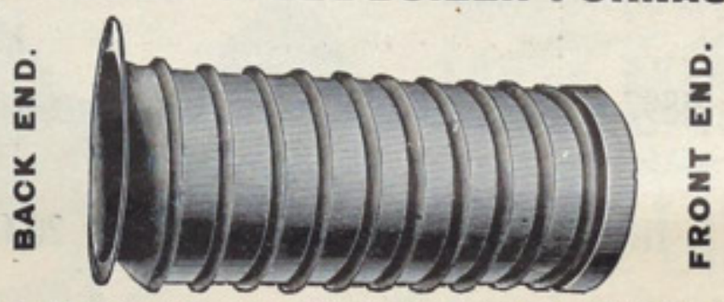

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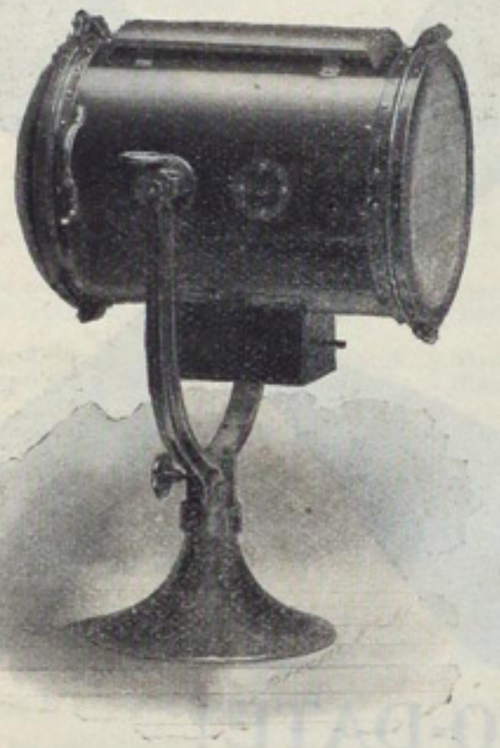

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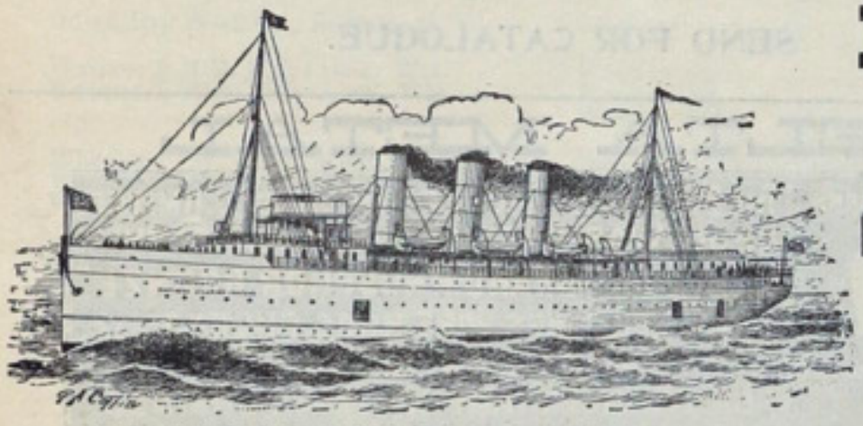

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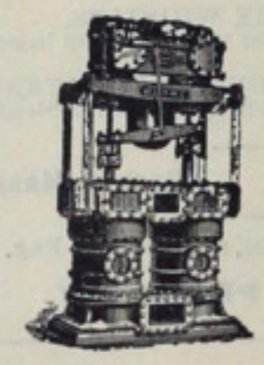

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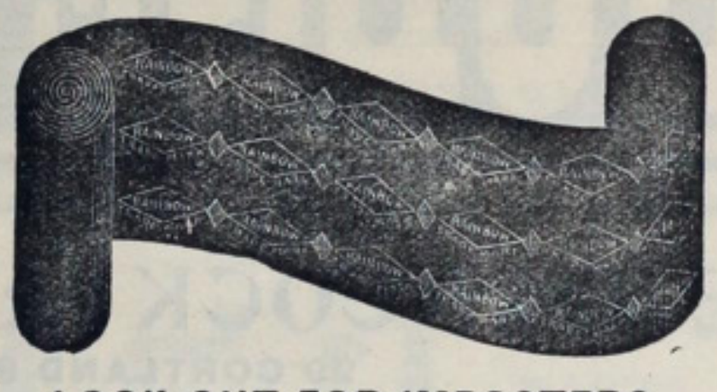

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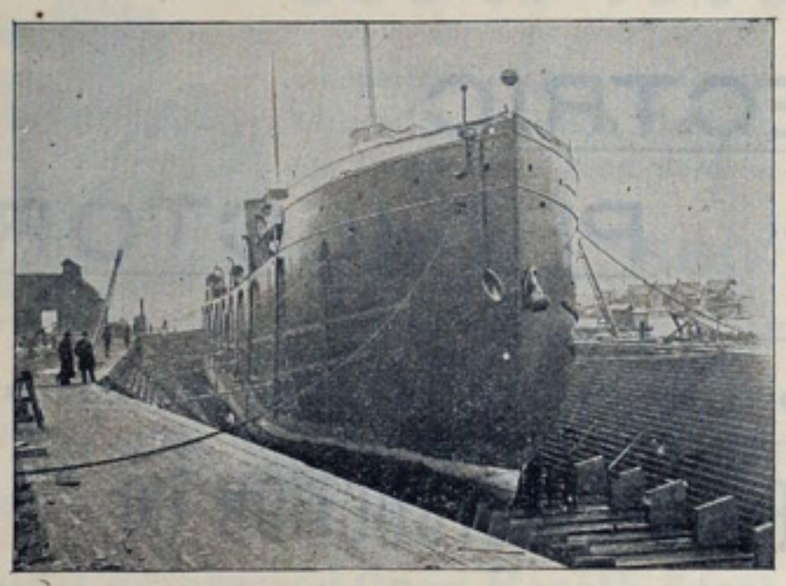

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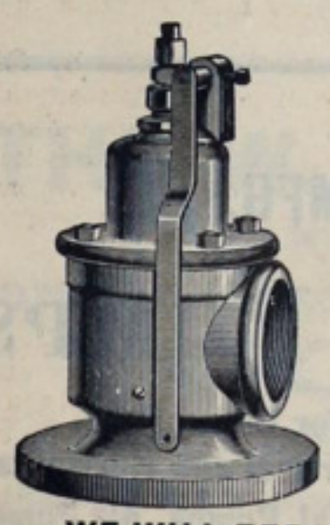

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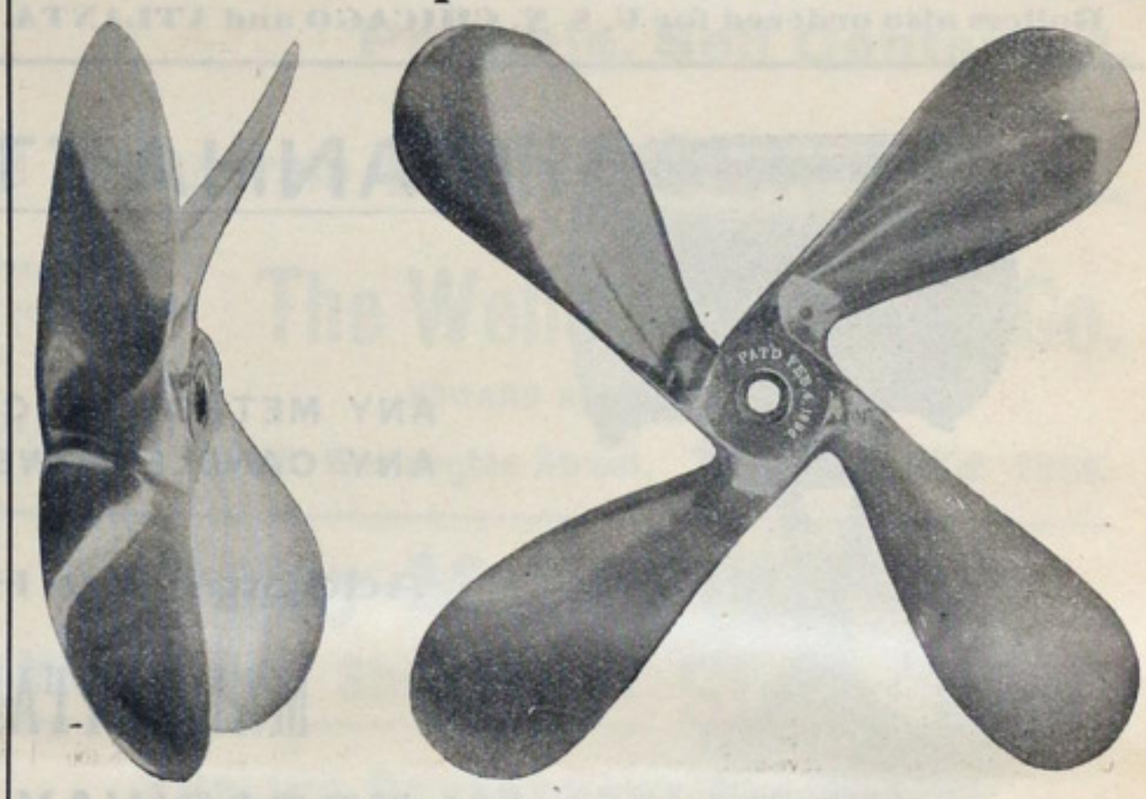

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